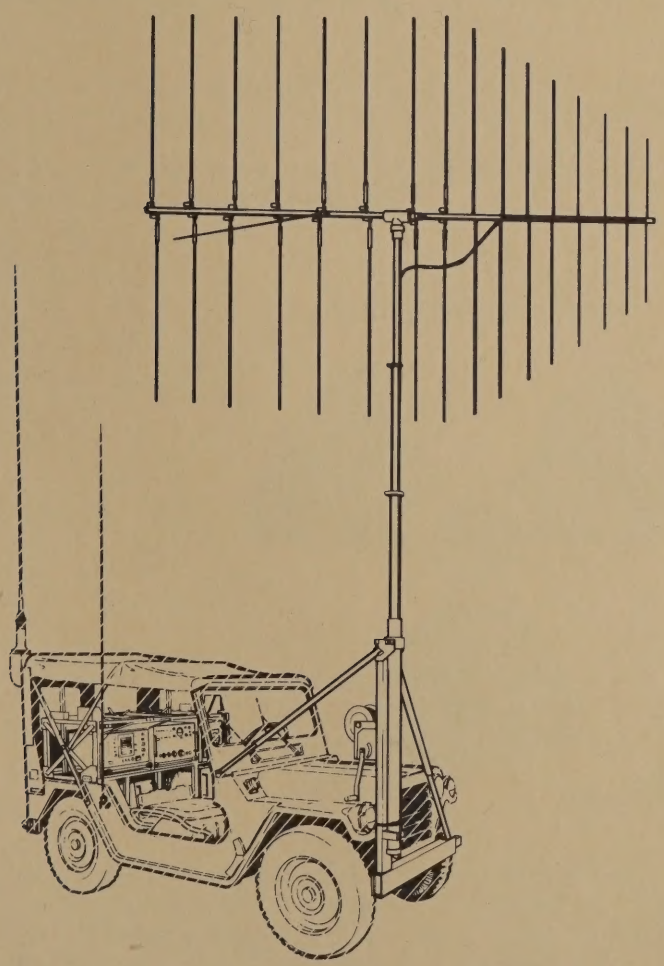
TM 11-5895-1161-10

TECHNICAL MANUAL

OPERATOR'S MANUAL

AMPLIFIER GROUP OG-181/VRC
(NSN 5895-01-172-2923)



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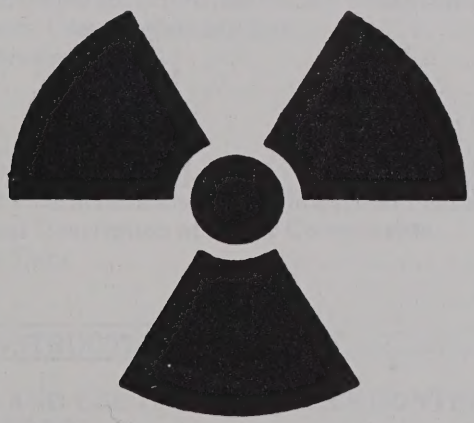
PAGE 3-1

HEADQUARTERS, DEPARTMENT OF THE ARMY
3 SEPTEMBER 1985

WARNINGS

- Never drive vehicle while LP antenna is attached to mast. Personal injury can result from fragments of an LP antenna and/or mast which has been damaged.
- Position vehicle so there are no overhead obstructions. Avoid overhead power lines by at least 50 inches above highest point of LP antenna. Failure to heed this warning may cause injury or even death.
- Be careful not to allow bare flesh to touch metal during extreme cold. Flesh could stick and freeze to metal.
- Ensure that radio antenna is connected to proper connector on amplifier-control prior to operation. Otherwise, you could be injured by high rf voltage at connector if amplifier-control goes into high rf input fault.
- Ensure that all elements are securely fastened to boom sections before raising LP antenna and mast to prevent elements from falling loose and possibly causing personal injury.
- When lowering mast, pull base of mast away from mast support and keep cable tight. Otherwise, you could be injured if base of mast springs back.

RF RADIATION HAZARD



STD–RW–2

- Dangerous rf power exists in and around the LP antenna during operation. Do not operate the amplifier group with personnel within 38 inches of the LP antenna. Do not transmit without having mast fully erect and extended. Do not handle, or come closer than 15 inches to, LP antenna cable while transmitting. Failure to heed this warning may cause injury.

WARNINGS

- Do not rapidly telescope mast sections as mast will rapidly pivot to vertical position and possibly cause injury.
- Turn off amplifier-control power before lowering LP antenna. Failure to heed this warning may cause injury.
- Avoid heavy icing of the LP antenna. Wear proper headgear and eye protection. Heavy ice may cause injury while LP antenna is being lowered.
- Do not disconnect LP antenna while amplifier-control is in transmit mode. Failure to heed this warning may cause injury.
- Do not have vehicle engine running while setting up or taking down system. Failure to heed this warning may cause injury.

Technical Manual
No. 11-5895-1161-10

Headquarters
DEPARTMENT OF THE ARMY
Washington, DC, 3 September 1985

Operator's Manual
AMPLIFIER GROUP OG-181/VRC
(NSN 5895-01-172-2923)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedure, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to: Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL-ME-MP, Fort Monmouth, New Jersey 07703-5007. In either case, a reply will be furnished to you.

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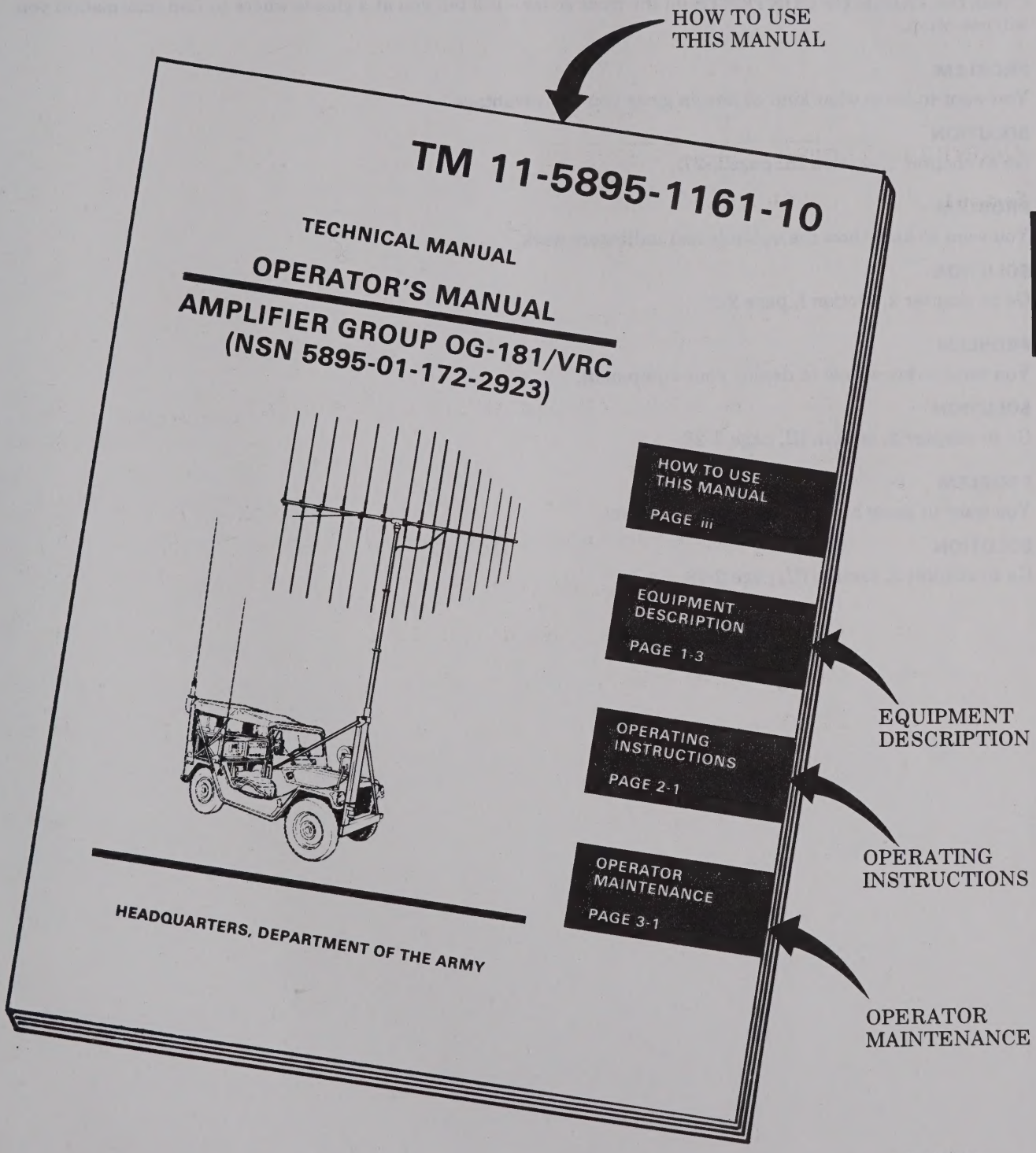
HOW TO USE THIS MANUAL

The cover of this manual (TM 11-5895-1161-10) shows Amplifier Group OG-181/VRC deployed in the field. The cover index lists portions of the manual most often used by the operator. Chapter and section headings most important to the user are boxed for easier location in the manual. Illustrations are used to simplify deployment and operation of Amplifier Group OG-181/VRC.



HOW TO USE THIS MANUAL – Continued

PROBLEM

You want to find specific information quickly.

SOLUTION

Check the TABLE OF CONTENTS on the front cover – it'll tell you at a glance where to find information you will use often.

PROBLEM

You want to know what kind of terrain gives you the advantage.

SOLUTION

Go to chapter 2, section III, page 2-27.

PROBLEM

You want to know how the controls and indicators work.

SOLUTION

Go to chapter 2, section I, page 2-2.

PROBLEM

You want to know how to deploy your equipment.

SOLUTION

Go to chapter 2, section III, page 2-28.

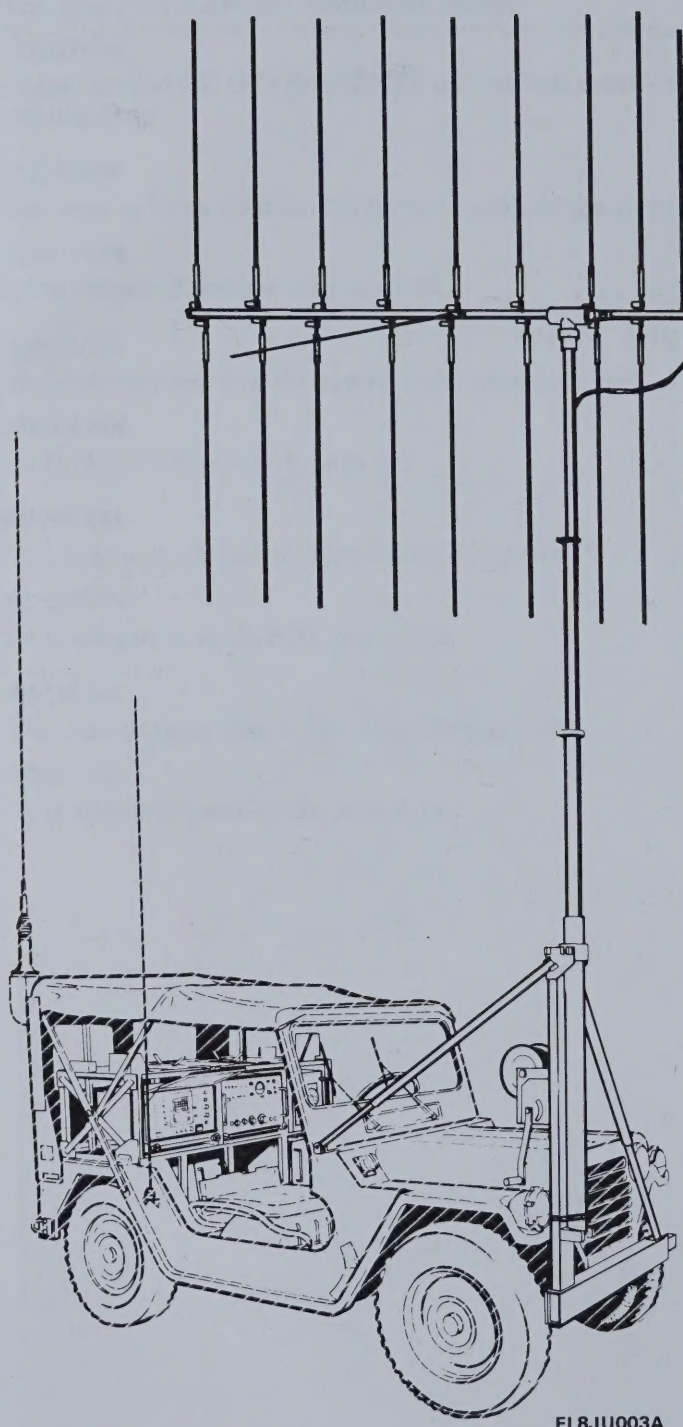
PROBLEM

You want to know how to stow your equipment.

SOLUTION

Go to chapter 2, section III, page 2-79.

AMPLIFIER GROUP OG-181/VRC



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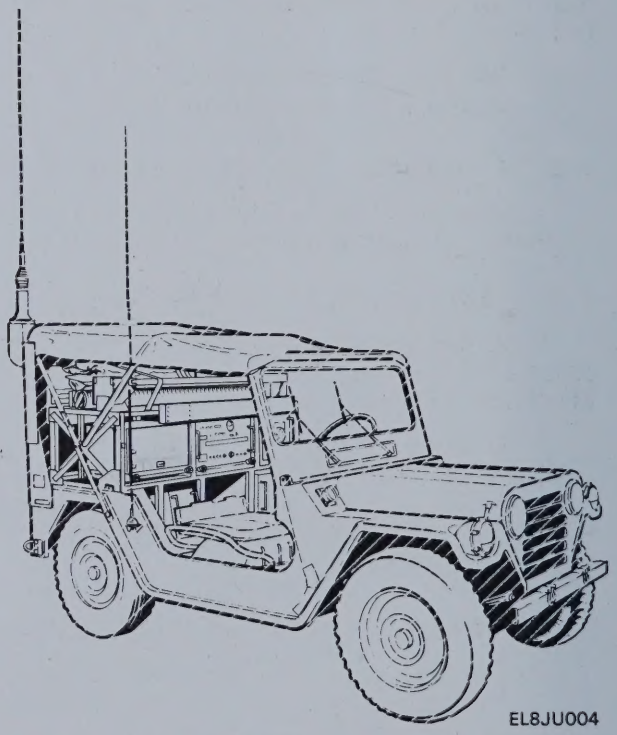
DEPLOYED CONFIGURATION



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MARCH-ORDER CONFIGURATION

CHAPTER 1
INTRODUCTION

Section I. GENERAL INFORMATION

1-1. SCOPE.

This manual provides operation and operator's maintenance instructions for Amplifier Group OG-181/VRC. For use as a jammer, Amplifier Group OG-181/VRC detects and displays radio signals for an operator who may, if required, then transmit a high-power jamming signal toward a selected target station. For use as a communications system, Amplifier Group OG-181/VRC may also be used to extend the operating power and communication range of its auxiliary radio set. References to other manuals are listed in appendix A. Equipment limitation is as follows:

Winds. Guy ropes are required if winds exceed 35 miles per hour (mph). Antenna should not be erected if winds are expected to exceed 60 mph.

1-2. CONSOLIDATED INDEX OF ARMY PUBLICATIONS AND BLANK FORMS.

Refer to the latest issue of DA Pam 310-1 to determine whether there are new editions, changes or additional publications pertaining to the equipment.

1-3. MAINTENANCE FORMS, RECORDS, AND REPORTS.

a. Reports of Maintenance and Unsatisfactory Equipment. Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA Pam 738-750 as contained in The Army Maintenance Management System (TAMMS).

b. Report of Packaging and Handling Deficiencies. Fill out and forward SF 364 (Report of Discrepancy (ROD)) as prescribed in AR 735-11-2/DLAR 4140.55/NAVMATINST 4355.73A/AFR 400-54/MCO 4430.3F.

c. Discrepancy in Shipment Report (DISREP) (SF 361). Fill out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 55-38/NAVSUPINST 4610.33C/AFR 75-18/MCO P4610.19D/DLAR 4500.15.

1-4. HAND RECEIPT (-HR) MANUALS.

This manual has a companion with a TM number followed by "-HR" (which stands for Hand Receipt). The TM 11-5895-1161-10-HR consists of preprinted hand receipts (DA Form 2062) that list end item related equipment (i.e., COEI, BII, and AAL) you must account for. As an aid to property accountability, additional -HR manuals may be requisitioned from the U.S. Army Adjutant General Publications Center in Baltimore, MD in accordance with procedures in chapter 3, AR 310-2, and DA Pam 310-10-2.

1-5. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR'S).

If your amplifier group needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design. Put it on an SF 368 (Quality Deficiency Report). Mail it to Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL-ME-MP, Fort Monmouth, New Jersey 07703-5007. We'll send you a reply.

1-6. NOMENCLATURE CROSS-REFERENCE LIST.

Official Nomenclature	Common Names
Amplifier Group OG-181/VRC	Amplifier Group
Display, Panoramic IP-1475/VRC	Panoramic Display
Amplifier-Control AM-7235/VRC	Amplifier-Control
Antenna Assembly, Log Periodic AS-3678/VRC	LP Antenna Assembly
Mast, Antenna AB-1321/VRC	Mast
Mount Assembly, Antenna Mast MT-6337/VRC	Mast Mount
Rack Assembly, Electronic Equipment MT-6343/VRC	Rack
Radio Set AN/VRC-46 or AN/VRC-47	Radio Set
Receiver Transmitter, Radio RT-524( )/VRC	RT Unit
Receiver, Radio R-442( )/VRC	Receiver
Antenna AS-1729/VRC	Radio Antenna
TSEC/KY-38 or KY-57	KY Unit
Truck, Utility, 4X4, ¼ Ton M151A1 or M151A2	Vehicle

1-7. LIST OF ABBREVIATIONS.

AMPL ..... Amplitude
ATTN ..... Attenuation
Authd ..... Authorized
CTA ..... Common Table of Allowance
dBm ..... Decibels Above or Below 1 Milliwatt
Illusn ..... Illustration
JTA ..... Joint Table of Allowance
kHz ..... Kilohertz
LP ..... Log Periodic
MHz ..... Megahertz
MOD ..... Modulation
MTOE ..... Modified Table of Organization and Equipment
PMCS ..... Preventive Maintenance Checks and Services
REV ..... Reverse
REXMT ..... Retransmit
R/W ..... Radio Wire
TDA ..... Tables of Distribution and Allowances
U/M ..... Unit of Measure

1-8. GLOSSARY.

Amplitude ..... Value of signal strength or height of signal trace
Attenuation ..... Reduction in magnitude, amplitude, or strength
Auxiliary equipment ..... Other equipment
Azimuth ..... Horizontal direction
Baseline ..... Line on cathode ray tube (crt) when no signal trace is displayed
dBm ..... Units of height of signal trace on graticule. Higher (more positive) value means higher signal trace. Changes in height are expressed in decibels (dB).
Deploy ..... To place in operating condition
Detent ..... A catch which, in being released, allows motion of a device
Dispersion ..... Width of received signal band that is displayed on graticule
Effective radiated power (ERP) ..... RF power transmitted from LP antenna. ERP equals LP antenna input power times antenna gain; expressed in watts.
Elevation ..... Vertical direction
Forward power ..... Transmit rf power, in watts, that goes from amplifier-control to LP antenna.
Graticule ..... Lines and numbers on face of crt
Immersion ..... State of being submerged
Lanyard ..... Cord used to hold something
Log range ..... Particular scale (range) selected for display of signal on crt graticule
Polarization ..... Position of LP antenna elements in relation to earth. With horizontal polarization, elements are parallel with horizon and can be used in jamming targets that also have horizontally polarized antennas, such as LP antennas. With vertical polarization, elements are perpendicular to horizon and can be used in jamming targets that have vertically polarized antennas, such as whips. With 45-degree polarization, elements are at 45 degrees in relation to horizon and can be used in jamming targets of uncertain polarization.
Reverse power ..... Transmit rf power, in watts, that reflects back toward amplifier-control from LP antenna and is therefore unuseable power. Varies due to things such as rf connections and weather.
Slow blow fuse ..... Will not blow immediately when normal short-term current surges above its rated value.
VSWR ..... Voltage standing wave ratio. Measure of efficiency of rf power transfer from amplifier-control to LP antenna; lower vswr means higher efficiency and better transmitted power. Because of things such as poor rf connections, weather, or location of trees, vswr increases to cause higher reverse power and lower transmitted power.

Section II. EQUIPMENT DESCRIPTION

1-9. EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES.

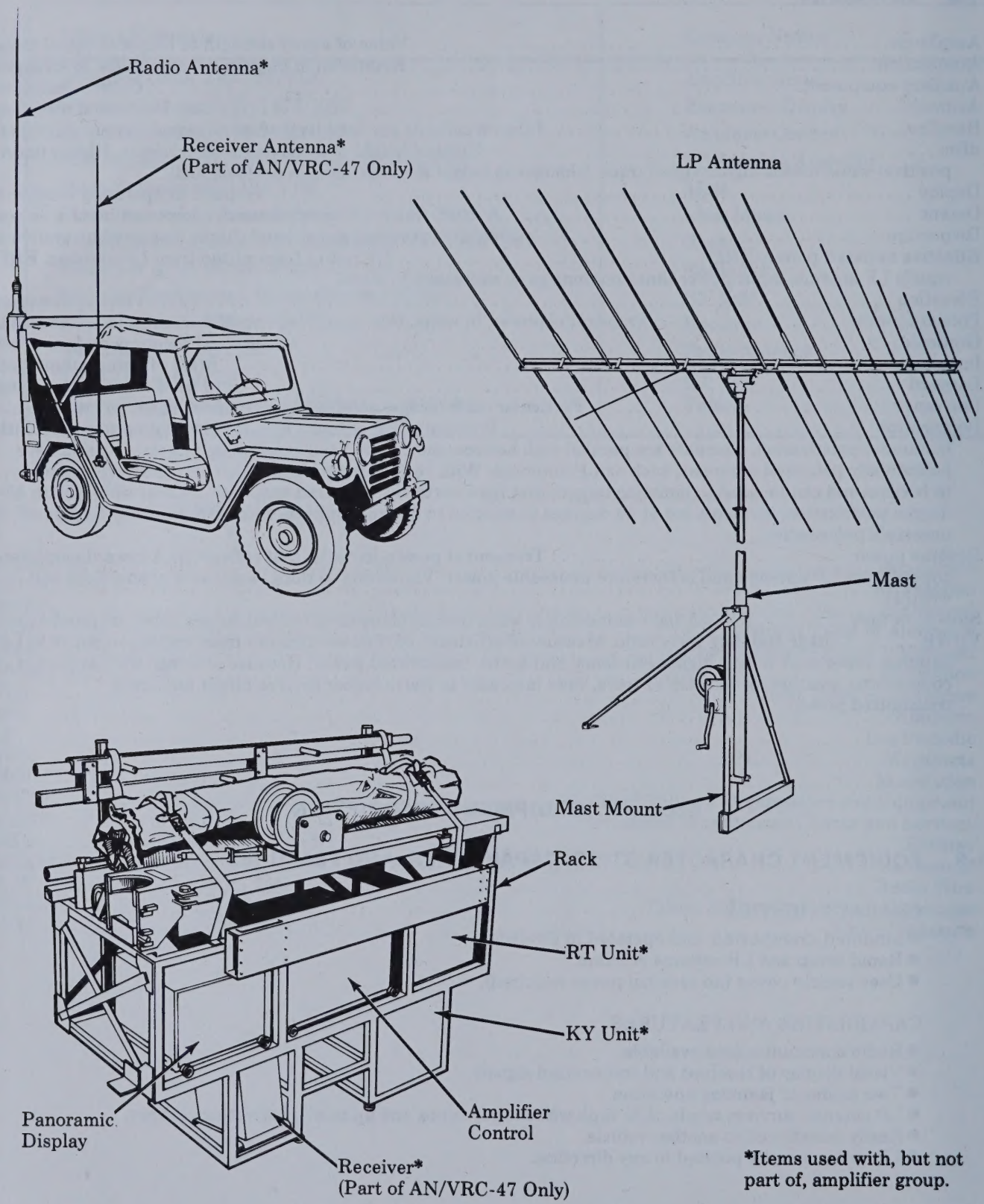
CHARACTERISTICS

- Mounted, transported, and operated in a vehicle.
- Rapid setup and LP antenna erection.
- Uses vehicle power (no external power required).

CAPABILITIES AND FEATURES

- Radio communications available.
- Visual display of received and transmitted signals.
- Two modes of jamming operation.
- LP antenna survives winds of 35 mph without guy ropes and up to 63 mph with guy ropes.
- Easily transferred to another vehicle.
- LP antenna easily pointed in any direction.

AMPLIFIER GROUP MAJOR COMPONENTS



*Items used with, but not part of, amplifier group.

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1-10. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS.

LP ANTENNA

Receives target signals and transmits jamming signal.

MAST

Raises LP antenna 18 feet above ground.

MAST MOUNT

Consists of bumper attachment, mast support, and winch.

AMPLIFIER-CONTROL

Used to tune system to target signal and provides modulation for jamming signal.

PANORAMIC DISPLAY

Visually displays received and transmitted signals. It can display several simultaneous signals, unlike a panoramic adapter which usually displays one signal. Can be used in other applications.

RECEIVER

Auxiliary receiver part of Radio Set AN/VRC-47.

KY UNIT

Permits secure communications through radio set.

RT UNIT

Provides short range, two-way, fm radio-telephone communication and, when controlled by the amplifier-control, provides a 1 to 3 watt jamming signal to the amplifier-control. Contains the receiver which, when controlled by the amplifier-control, receives the target signals.

1-11. EQUIPMENT DATA.

WEIGHTS AND DIMENSIONS (Approximate)

LP Antenna Assembly (Assembled)	
Weight	48.75 lb
Length	164.25 in.
Width	157 in.
Mast (Stowed)	
Weight	26.25 lb
Length	57.75 in.
Diameter	7.75 in.
Bumper Attachment	
Weight	8.75 lb
Length	42 in.
Width	5 in.
Thickness	4 in.
Mast Support (Stowed)	
Weight	36.5 lb
Length	57 in.
Width	14 in.
Thickness	12.5 in.
Rack	
Weight	60 lb
Length	55 in.
Height	27 in.
Depth	26 in.
Panoramic Display	
Weight	17 lb
Height	9 in.
Width	13.25 in.
Depth	10.5 in.
Amplifier-Control	
Weight	83 lb
Height	11 in.
Width	20 in.
Depth	22.5 in.

PERFORMANCE

Operating Modes	
Normal	Normal radio set communications
Step Jamming	30 to 75.95 MHz, 50 kHz steps
Continuous Jamming	20 to 53 MHz, 1 kHz steps
Input Power	28 Vdc at 50 A
Output Power	0 to 250 watts
Wind Speed without Guy Ropes	35 mph, gusts 75 mph
Wind Speed with Guy Ropes	63 mph, gusts 98 mph
Temperature Range	−40° to +125°F

ACCURACY (Continuous Jamming)

Tuning	±2 kHz
Stability	±3 kHz

MODULATION

Tone	860 or 980 Hz
Noise	Random audio (Resembles jet engine exhaust)

CHAPTER 2

OPERATING INSTRUCTIONS

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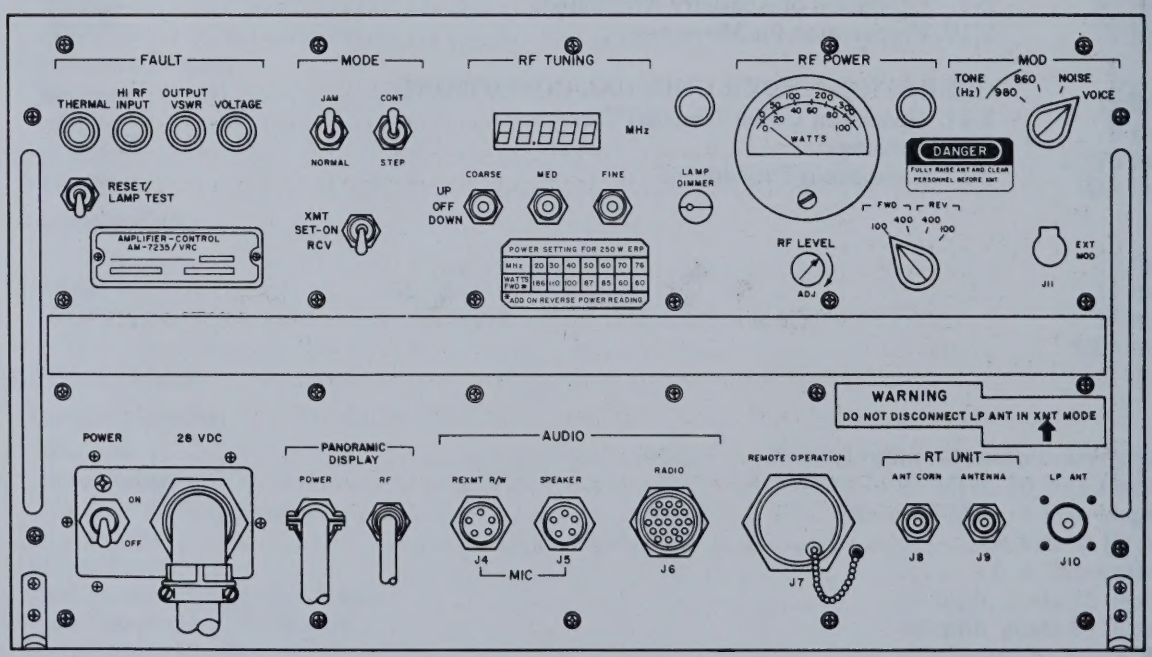
Section I. DESCRIPTION AND USE OF OPERATOR'S CONTROLS AND INDICATORS

2-1. AMPLIFIER-CONTROL.

The controls, indicators, and connectors you need to operate the amplifier-control are located on its front panel.



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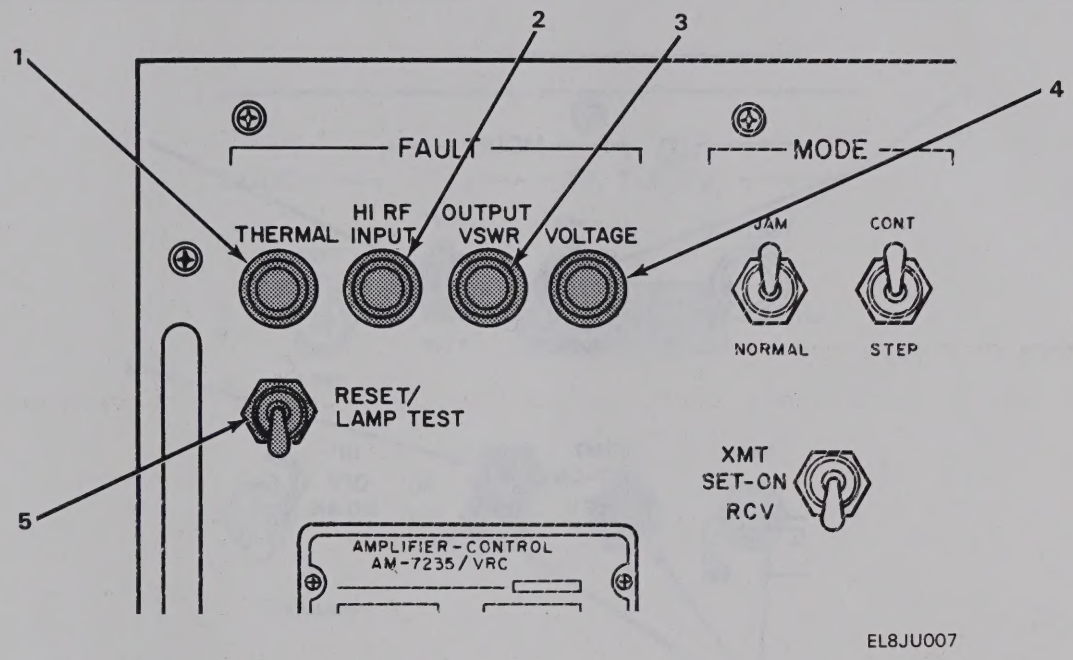
a. FAULT Control and Indicators.



1 THERMAL indicator
Lights if rf power amplifier operating temperature goes too high.

If THERMAL indicator lights, rf signal within amplifier-control turns off automatically.

2 HI RF INPUT indicator
Lights if RT unit is incorrectly set on high power.

If HI RF INPUT indicator lights, rf signal within amplifier-control turns off automatically and goes to radio antenna.

3 OUTPUT VSWR indicator
Lights if reverse rf power output goes too high.

If OUTPUT VSWR indicator lights, rf signal within amplifier-control turns off automatically.

4 VOLTAGE indicator
Lights if either input voltage or power supply output voltage goes too high.

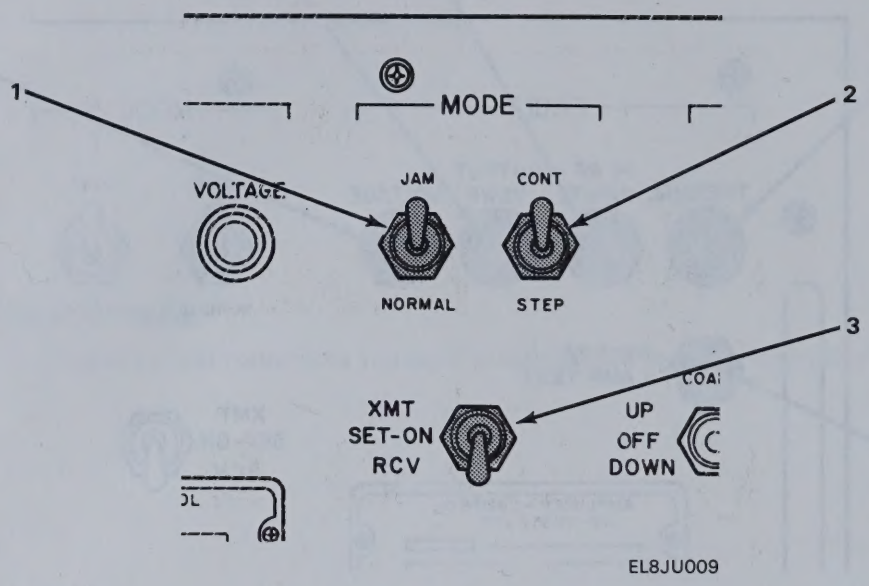
If VOLTAGE indicator lights, rf signal within amplifier-control turns off automatically.

5 RESET/LAMP TEST switch (spring-loaded)
When any fault is corrected and switch is pushed to up position, proper FAULT indicator turns off and internal fault sensor circuits are reset.

If no faults are present and switch is pushed to up position, all FAULT indicators light to ensure that they are good.

2-1. AMPLIFIER-CONTROL. – Continued

b. MODE Controls.



1 JAM NORMAL switch
Selects method of connection of amplifier-control in rf path of RT unit output.

When switch is in JAM position, RT unit rf output goes into amplifier-control where it is amplified directly in step mode, or changed in frequency and then amplified in continuous mode, as determined by CONT STEP switch.

For receiving, rf from LP antenna passes directly to RT unit in step mode. In continuous mode, rf changes to 75 MHz and then passes to RT unit.

When switch is in NORMAL position, RT unit rf output bypasses amplifier-control circuits and goes to whip antenna of radio set. This lets you operate radio set in its normal operating modes.

2 CONT STEP switch
Selects rf tuning method of amplifier-control.

When switch is in CONT position and RT unit tuning is set at 75 MHz, amplifier-control RF TUNING switches can be used to vary tuning in 1 kHz steps from 20 to 53 MHz.

When switch is in STEP position, RT unit tuning controls can be used to vary tuning in 50 kHz steps from 30 to 75.95 MHz.

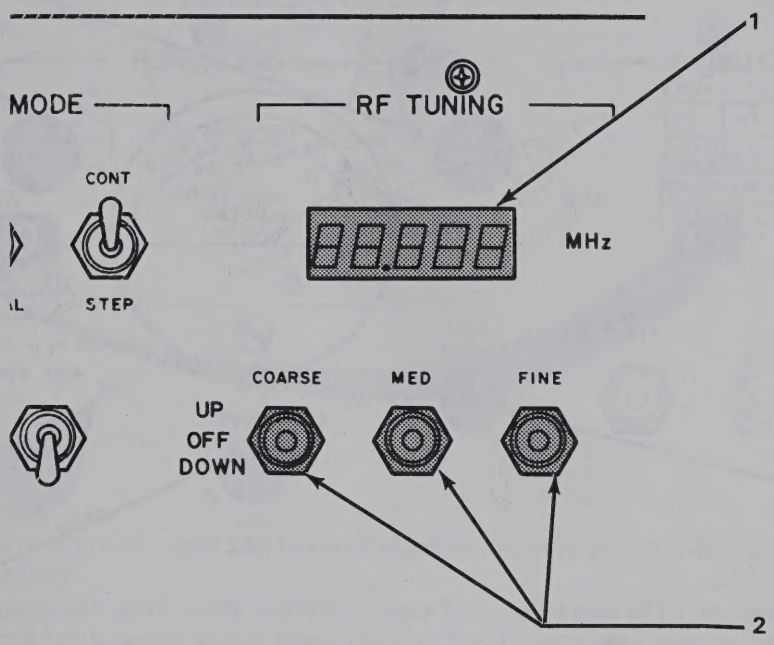
3 XMT SET-ON RCV switch
Selects operating mode of amplifier-control. When switch is in XMT position, amplifier-control supplies rf output power to LP antenna.

When switch is in SET-ON position, RT unit output signal can be indicated on amplifier-control RF TUNING MHz digital LCD, but no rf output goes to LP antenna.

This lets you see what frequency the system is tuned to without transmitting. It also causes a signal trace on panoramic display so you can tell where tuning is in relation to other signals.

When switch is in RCV position, received rf signals from LP antenna pass through amplifier-control to RT unit.

c. RF TUNING Controls and Indicator.



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1 RF TUNING MHz digital LCD
Indicates rf tuning from 20.000 to 76.000 MHz.

When XMT SET-ON RCV switch is in XMT position, digital LCD indicates amplifier-control tuning.

When XMT SET-ON RCV switch is in SET-ON position, digital LCD indicates RT unit tuning.

When XMT SET-ON RCV switch is in RCV position, digital LCD indicates as follows:

- All zeros if CONT STEP switch is in STEP position
- Amplifier-control tuning if CONT STEP switch is in CONT position.

2 RF TUNING COARSE, MED, and FINE switches
Varies rf tuned frequency of amplifier-control when CONT STEP switch is in CONT position.

UP position increases frequency; DOWN position decreases frequency; center is OFF position.

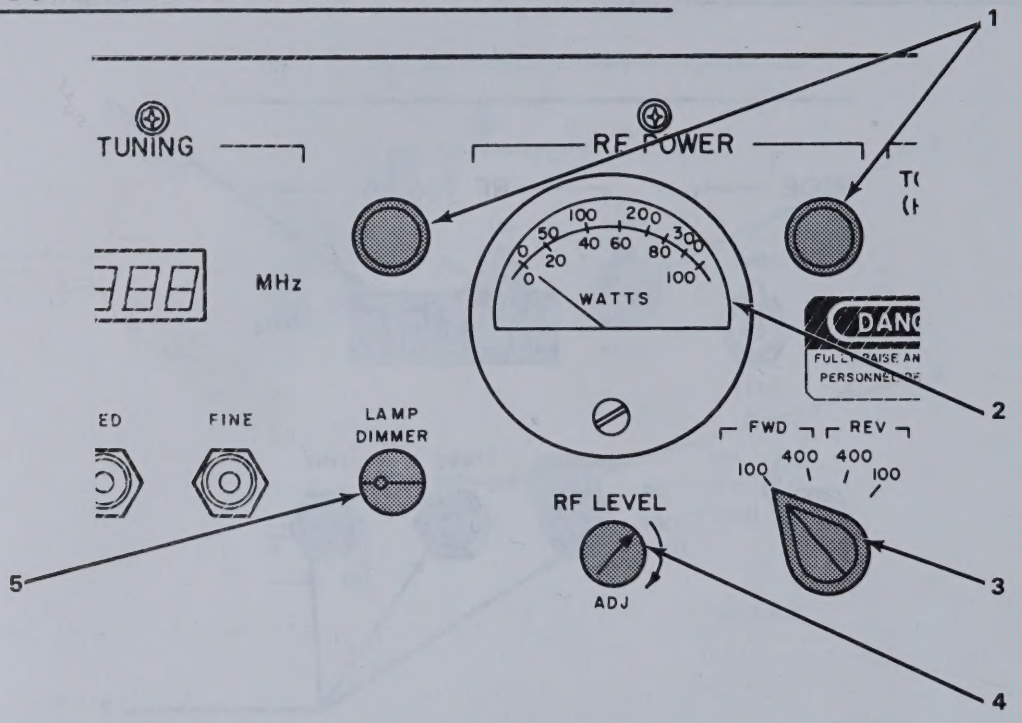
COARSE switch varies frequency at approximately 2 MHz per second.

MED switch varies frequency at approximately 100 kHz per second.

FINE switch varies frequency at approximately 1 kHz per second.

2-1. AMPLIFIER-CONTROL. – Continued

d. RF POWER and Panel Illumination Controls and Indicators.



1 Panel illumination lights
Provide illumination for nighttime viewing of controls and indicators.

Left-hand light illuminates RF TUNING area of panel; right-hand light illuminates RF POWER area.

2 RF POWER meter
Indicates transmitted rf power level at LP ANT connector.

Indicates either FWD (forward) or REV (reverse) transmitted power on either 100 watt or 400 watt scale as selected by FWD REV switch.

3 FWD REV switch
Selects scale and power direction for indication on RF POWER meter.

FWD 100 position selects 100 watt scale for indication of forward transmitted rf power.

FWD 400 position selects 400 watt scale for indication of forward transmitted rf power.

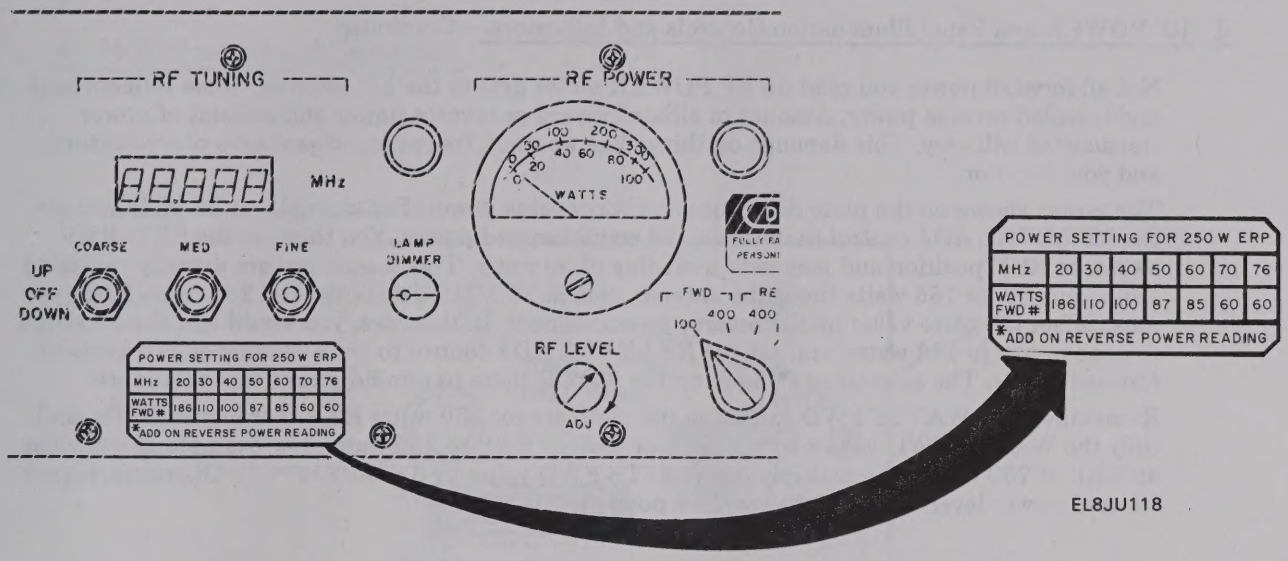
REV 400 and REV 100 positions have similar functions for reverse rf power.

4 RF LEVEL ADJ control
Adjusts transmitted rf power level at LP ANT connector.

Counterclockwise rotation lowers rf power level. Clockwise rotation raises rf power level.

5 LAMP DIMMER control
Adjusts brightness of panel illumination lights.

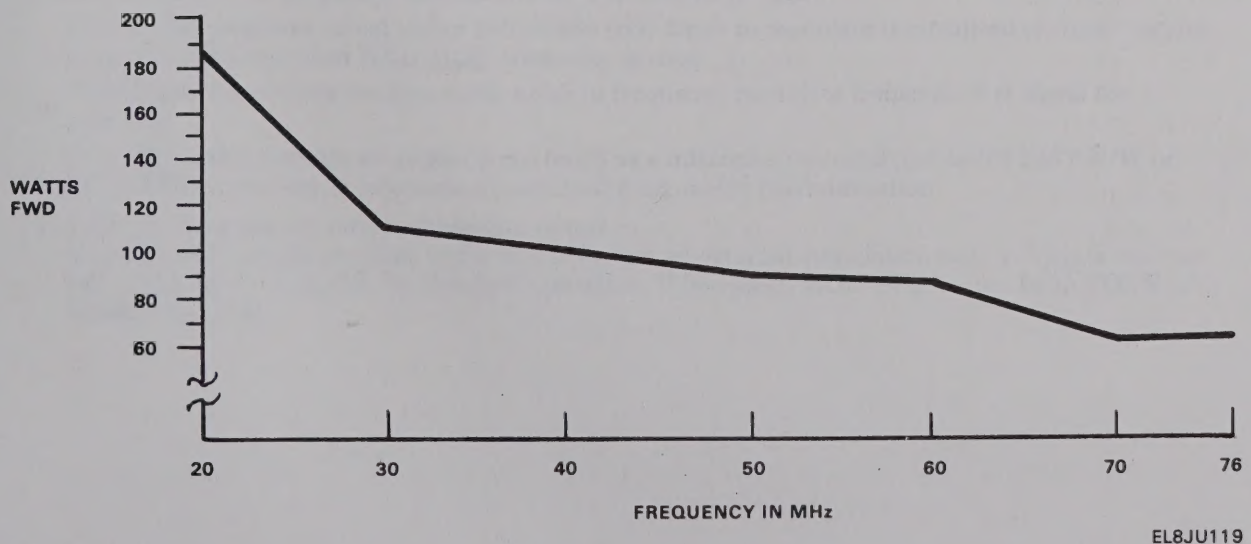
Counterclockwise rotation dims lights. Clockwise rotation brightens lights.



6 Power Setting instruction plate
Shows typical settings of rf power to get 250 watts of effective radiated power (ERP) at various amplifier group frequencies.

ERP is higher than power indicated on RF POWER meter because of gain of LP antenna. At higher frequencies, LP antenna can transmit power about three to four times power read on meter. Notice that the plate indicates 60 watts forward gets 250 watts ERP at 70 and 76 MHz and 87 watts forward gets 250 watts ERP at 50 MHz. But it takes 186 watts forward to get 250 watts ERP at 20 MHz.

This works the same way for frequenices in between those given on plate. Values of power follow a straight line between frequencies.



2-1. AMPLIFIER-CONTROL. – Continued

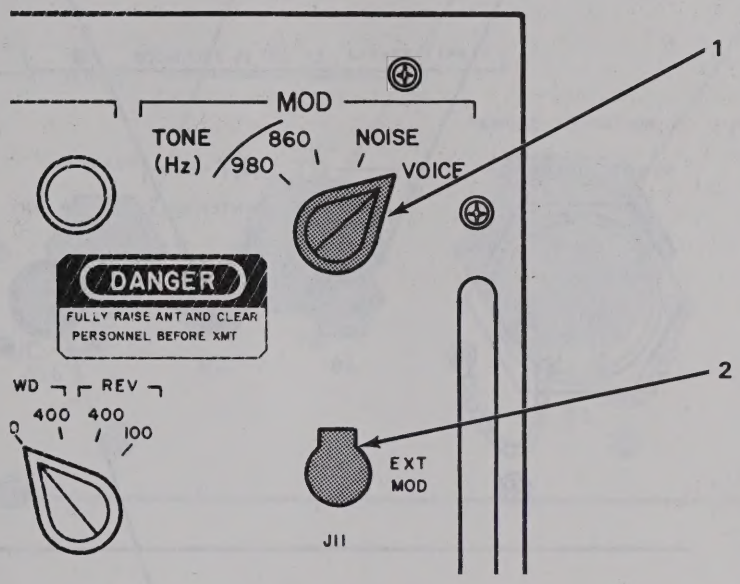
d. RF POWER and Panel Illumination Controls and Indicators. – Continued

Not all forward power you read on RF POWER meter gets to the LP antenna. Some reflects back and is called reverse power. Amount of either forward or reverse power and amount of power transmitted will vary. This depends on things like weather, frequency, cleanliness of connectors, and your location.

The power shown on the plate does not allow for reverse power. For example, at 20 MHz you set the RF LEVEL ADJ control to indicate 186 watts forward power. You then set the FWD REV switch to REV position and may note a reading of 30 watts. This means you are actually radiating 186 minus 30, or 156 watts times the antenna gain at 20 MHz. To get the full 250 watts ERP, you must offset the plate value by the reverse power amount. In this case, you would add the 30 watts reverse power to 186 watts, and set the RF LEVEL ADJ control to get a reading of 216 watts of forward power. The asterisked (*) note on the plate is there to remind you of this procedure.

Remember that WATTS FWD values on the plate are for 250 watts ERP. For higher ERPs, multiply the WATTS FWD values by the ratio of desired ERP to 250 watts. For example, if you want an ERP of 750 watts, you multiply the WATTS FWD value by 3 (750/250 = 3). Of course, higher forward power levels cause higher reverse power levels too.

e. MOD Controls and Connector.



1 MOD switch
Selects method of frequency modulation for transmitted rf signal.

TONE (Hz) positions select either 980 or 860 (Hz) tones to modulate transmitted rf signal for jamming. Are disabled when EXD MOD connector is used.

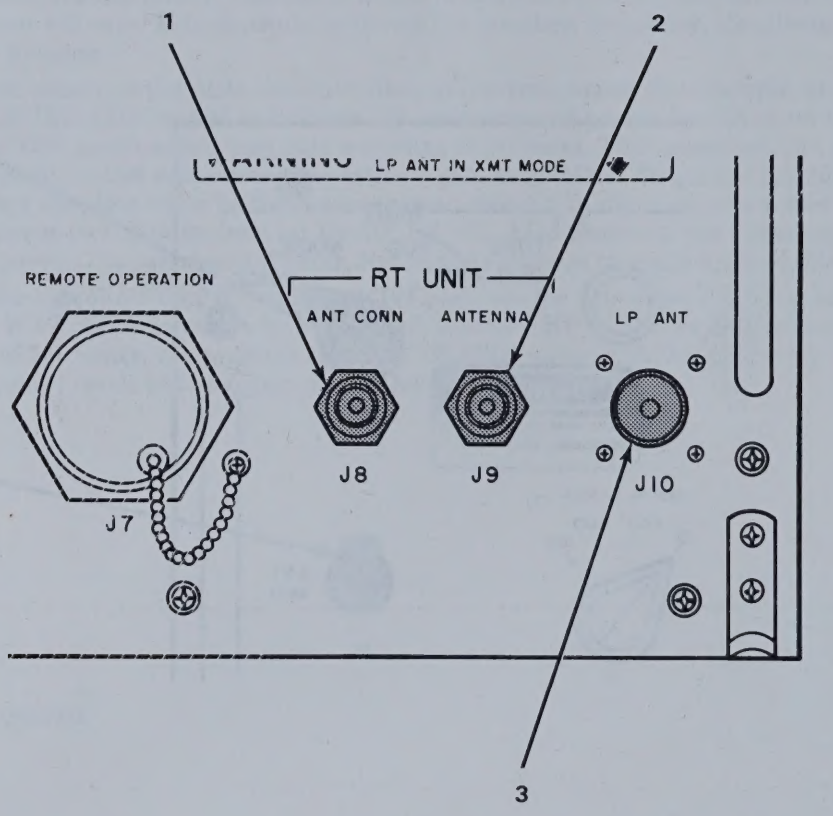
NOISE position selects random audio noise to frequency modulate transmitted rf signal for jamming.

VOICE position permits an audio device (such as a microphone) connected to REXMT R/W or SPEAKER connector to modulate transmitted rf signal for communication.

2 EXT MOD connector (under protective cover)
Connects microphone or other audio device for use as external modulation source. This is not normal microphone connector for standard operation. When used, MOD switch must be in TONE or NOISE positions.

2-1. AMPLIFIER-CONTROL. – Continued

f. Antenna Connectors.



1 RT UNIT ANT CONN connector
Connects rf to and from antenna connector on RT unit.

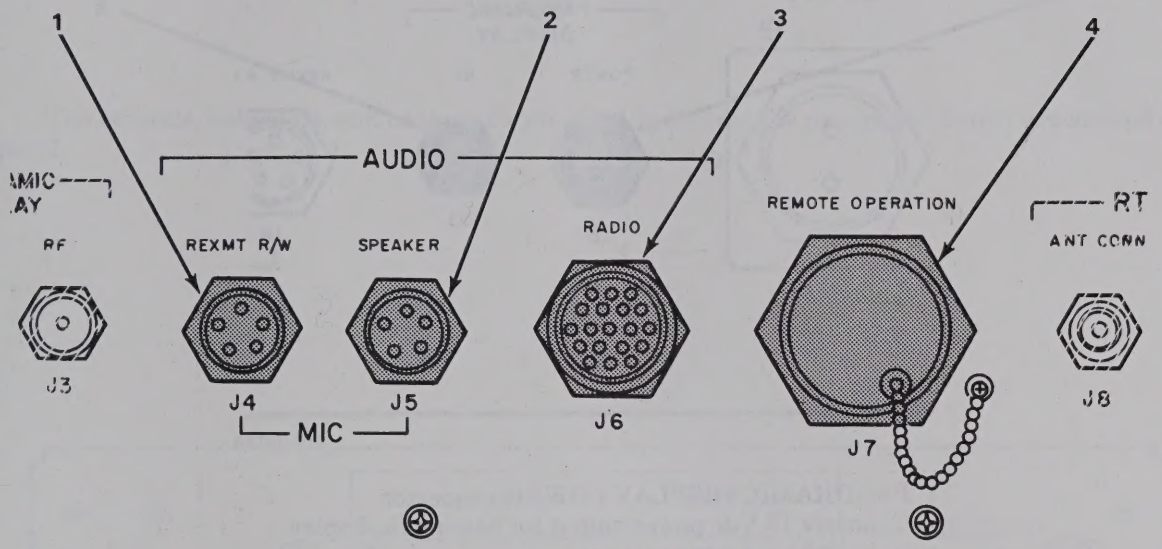
2 RT UNIT ANTENNA connector
Connects rf to and from radio antenna used with RT unit.

3 LP ANT connector
Connects rf to and from LP antenna assembly.

WARNING

Ensure that radio antenna is always connected to RT UNIT ANTENNA connector J9 prior to operating equipment. Otherwise, you could be injured by high rf voltage at J9 if amplifier-control goes into high rf input fault.

g. AUDIO and Remote Connectors.



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1 MIC REXMT R/W connector
Connects audio and control signals to or from one of the following:
- Handset
- Microphone
- Headset
- J6 connector on TSEC/KY-57 (if used) or J1 connector on TSEC/KY-38 (if used).

2 MIC SPEAKER connector
Connects audio and control signals to or from one of the following:
- Loudspeaker
- Headset
- Handset
- Microphone
- J6 connector on TSEC/KY-57 (if used) or J1 connector on TSEC/KY-38 (if used).

NOTE

If either KY unit is used and you need to send secure voice, a microphone or handset must be connected to J5 connector on KY unit junction box. Neither MIC REXMT R/W nor MIC SPEAKER connector on amplifier-control can be used to send secure voice.

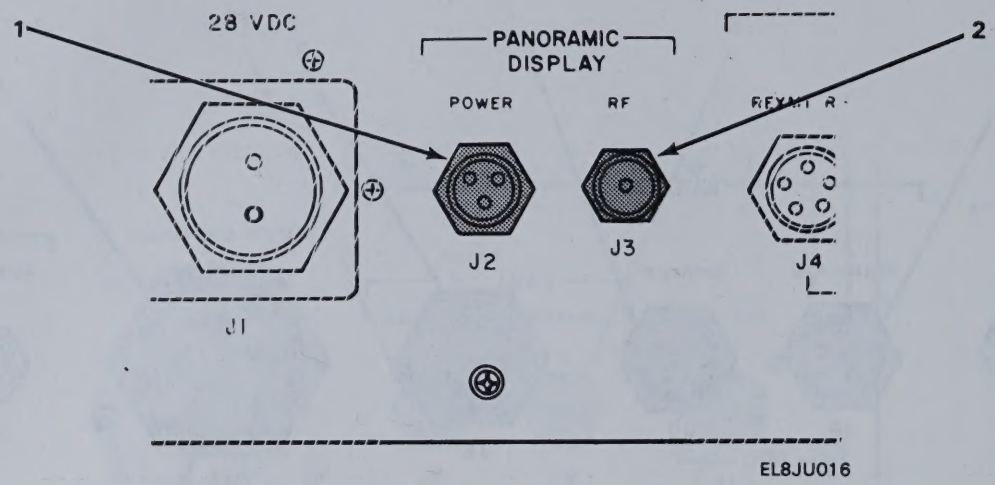
3 AUDIO RADIO connector
Connects audio and control signals to or from SPKR and RETRANSMIT R/W connectors on RT unit.

4 REMOTE OPERATION connector (protected)
Provides connections to and from a remote controller if used.

Connections permit remote operation of all amplifier-control front panel switches and controls except lamp dimming.

2-1. AMPLIFIER-CONTROL. – Continued

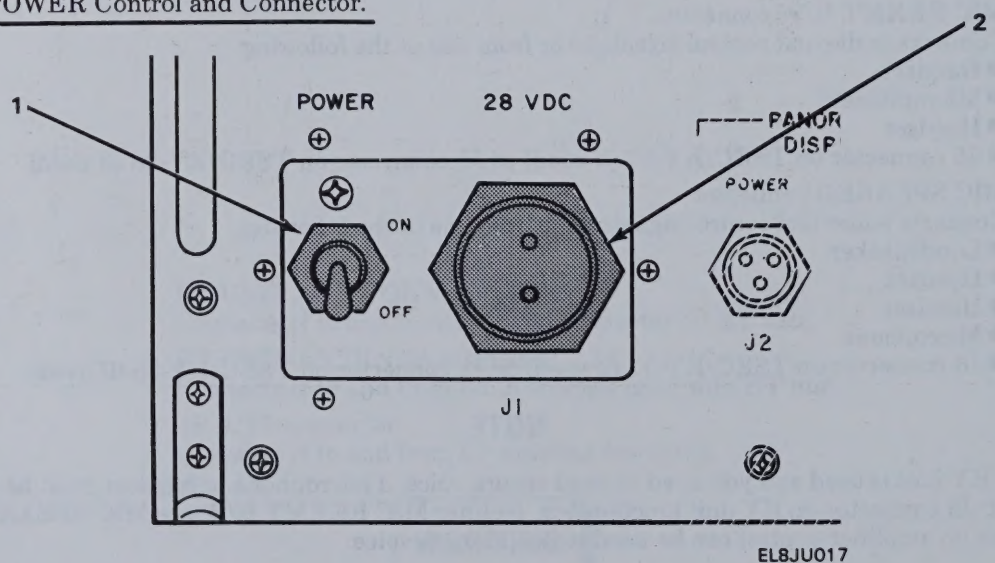
h. PANORAMIC DISPLAY Connectors.



1 PANORAMIC DISPLAY POWER connector
Connects 13 Vdc power output for panoramic display.

2 PANORAMIC DISPLAY RF connector
Connects rf output signal for panoramic display.

i. POWER Control and Connector.

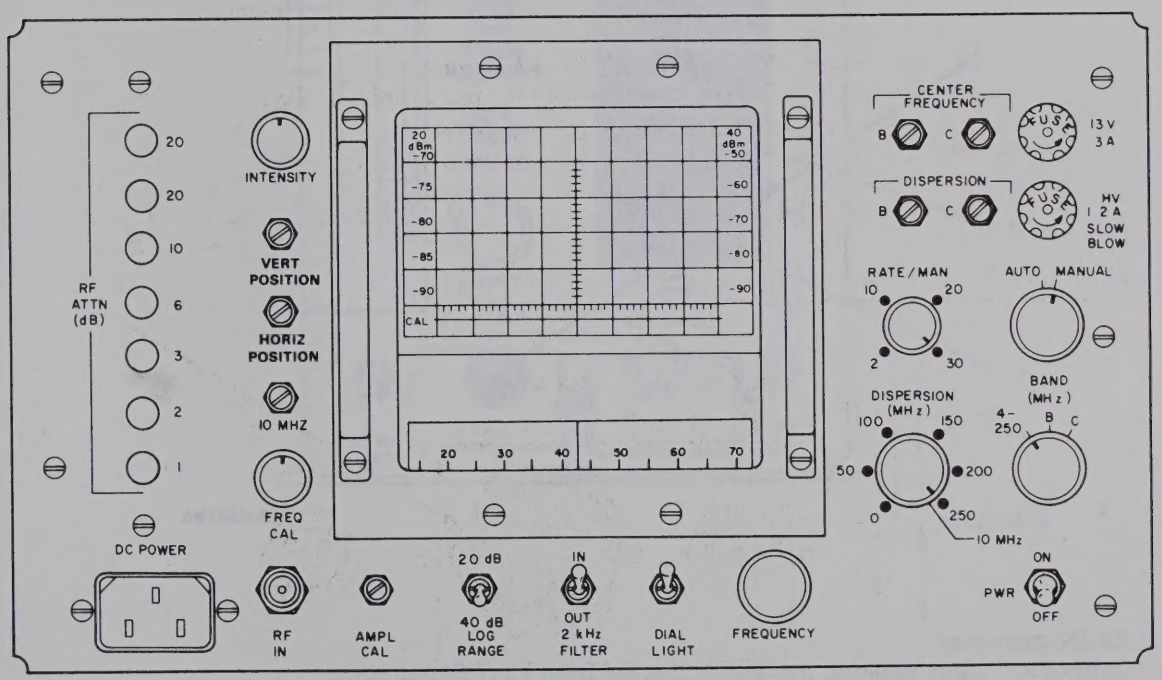


1 POWER circuit breaker
Turns amplifier-control on or off.
Protects vehicle battery if amplifier-control draws too much current (above 50 amperes).

2 28 VDC connector
Connects 28 Vdc power input to amplifier-control from vehicle battery.

2-2. PANORAMIC DISPLAY.

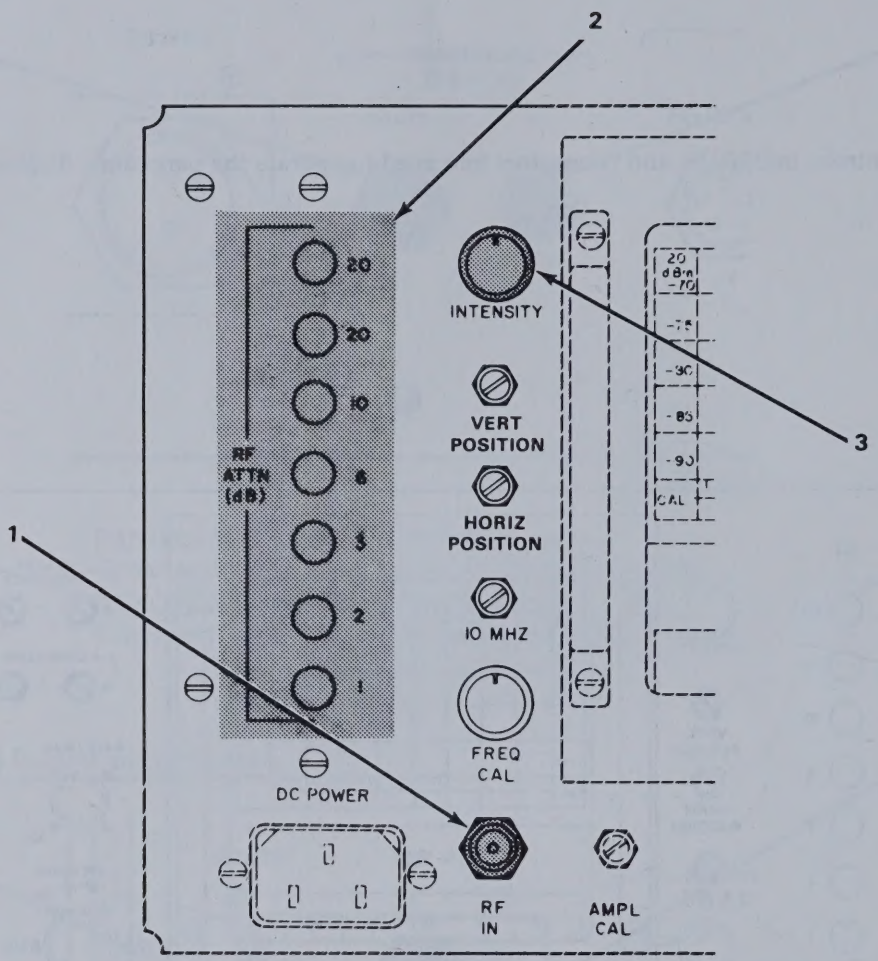
The controls, indicators, and connectors you need to operate the panoramic display are located on its front panel.



EL8JU018A

2-2. PANORAMIC DISPLAY. – Continued

a. RF Input/CRT Trace Controls and Connector.



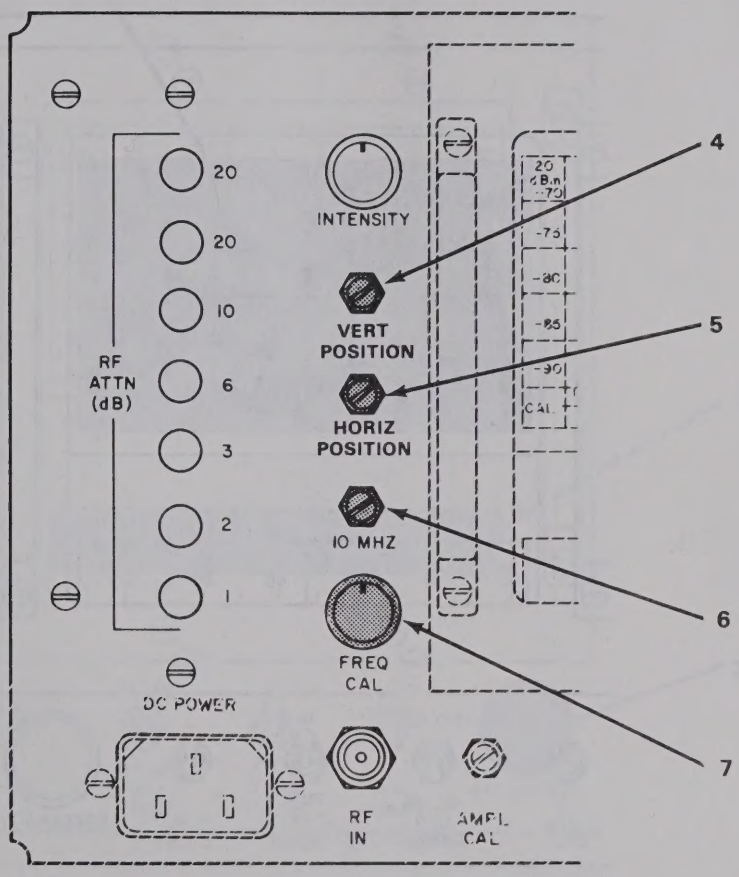
1 RF IN connector
Connects rf input signal to panoramic display from amplifier-control.

2 RF ATTN (dB) pushbuttons
Selects steps of attenuation to rf input signal from 0 to 62 dB.

When pushbutton is pressed in, it adds attenuation value printed beside it. When pushbutton is pressed again (released), it does not add attenuation.

3 INTENSITY control
Adjusts brightness of trace on crt.

Counterclockwise rotation dims crt trace. Clockwise rotation brightens crt trace.



EL8JU021A

4 VERT POSITION control (screwdriver adjustable)
This is a maintenance adjustment.

5 HORIZ POSITION control (screwdriver adjustable)
This is a maintenance adjustment.

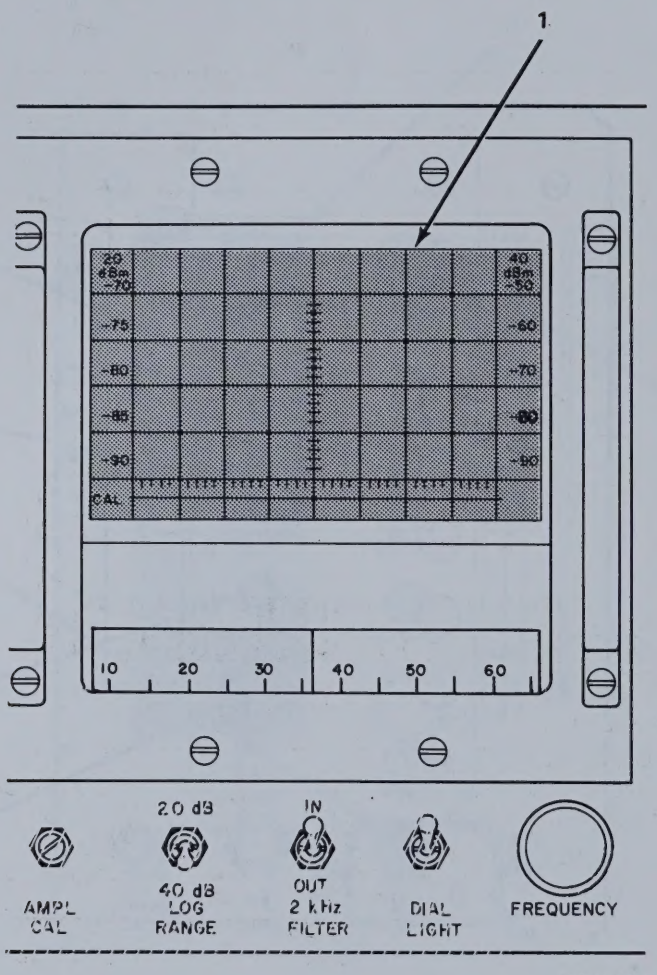
6 10 MHz CAL control (screwdriver adjustable)
This is a maintenance adjustment.

7 FREQ CAL control
Calibrates frequency dial to agree with an rf input signal from amplifier-control.

Counterclockwise rotation moves crt trace toward left to agree with frequency dial setting. Clockwise rotation moves crt trace toward right to agree with frequency dial setting.

2-2. PANORAMIC DISPLAY. – Continued

b. CRT Graticule/Frequency Dial Control and Indicators.



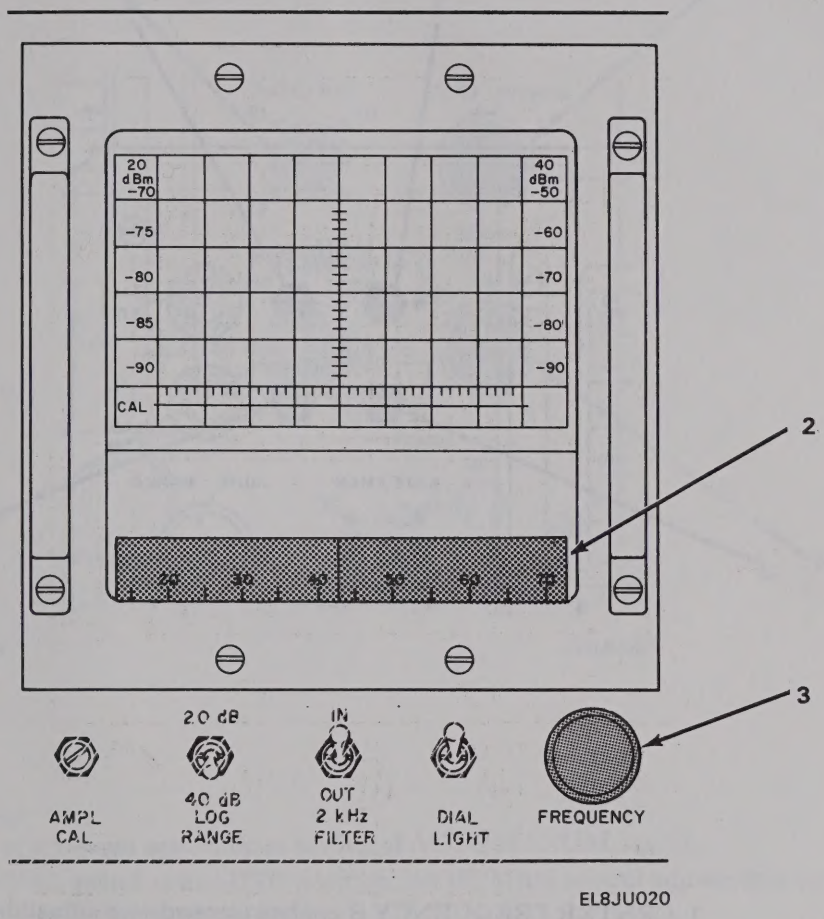
EL8JU022

1 CRT graticule
Displays a trace of rf signal amplitude on vertical scale and frequency on horizontal scale.

When LOG RANGE switch is in 20 dB position, each major vertical division equals 5 dB. When LOG RANGE switch is in 40 dB position, each major vertical division equals 10 dB.

CAL line on graticule is alined with trace baseline when no rf input signal is applied, 2 kHz FILTER switch is in IN position, and VERT POSITION control is adjusted.

Marker of rf signal frequency moves left or right as FREQUENCY control is rotated. When marker is in center of graticule, rf signal frequency can be read on frequency dial.

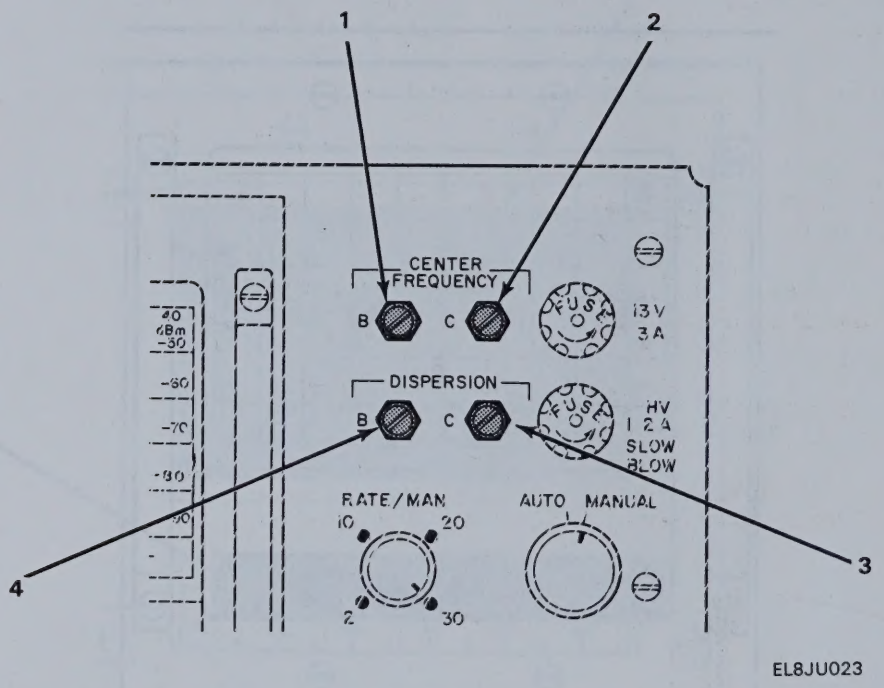


2 Frequency dial
Indicates panoramic display tuned frequency when rf signal marker is centered in crt graticule.
Connected directly to FREQUENCY control and moves as control is rotated.
Graduated in 5 MHz steps with numerals at 10 MHz steps.

3 FREQUENCY control
Changes panoramic display tuned frequency.
Connected through gear train to frequency dial and potentiometer. Rotation changes dial setting and voltage which controls tuned frequency.
Full counterclockwise is above 250 MHz. Clockwise rotation decreases tuned frequency to below 10 MHz.

2-2. PANORAMIC DISPLAY. – Continued

c. CENTER FREQUENCY and DISPERSION Controls.



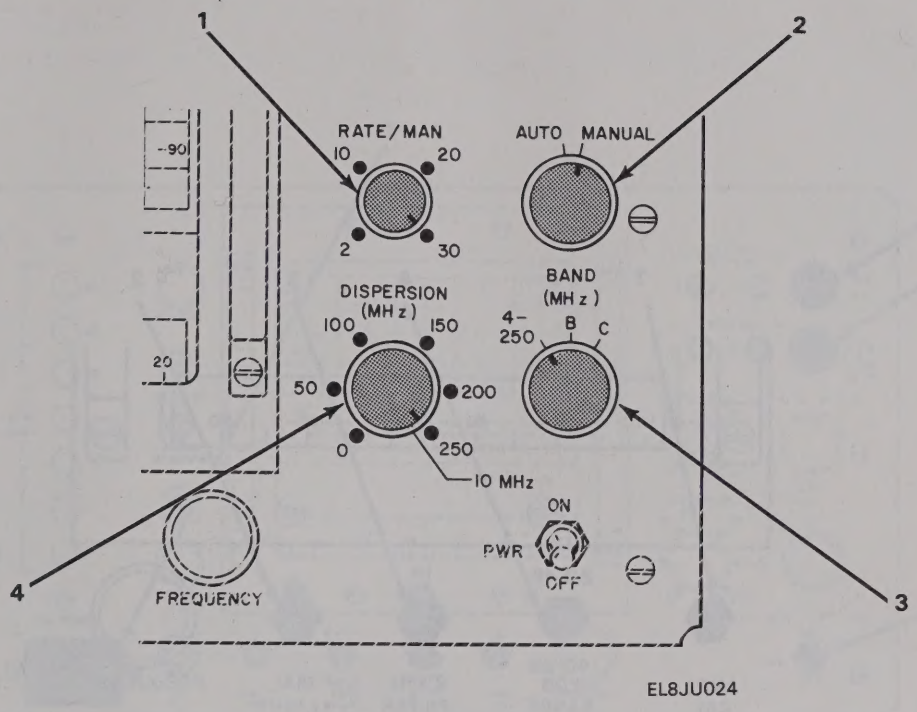
1 CENTER FREQUENCY B control (screwdriver adjustable)
This is a maintenance adjustment.

2 CENTER FREQUENCY C control (screwdriver adjustable)
This is a maintenance adjustment.

3 DISPERSION C control (screwdriver adjustable)
This is a maintenance adjustment.

4 DISPERSION B control (screwdriver adjustable)
This is a maintenance adjustment.

d. Mode/Band Controls.



1 RATE/MAN control
Determines sweep of crt beam according to setting of AUTO MANUAL switch.

When AUTO MANUAL switch is in AUTO position, RATE/MAN control adjusts rate at which crt beam sweeps (from 2 to 30 times per second).

When AUTO MANUAL switch is in MANUAL position, RATE/MAN control positions crt beam at any point on the sweep.

2 AUTO MANUAL switch
Determines what function the RATE/MAN control does.

3 BAND MHz switch
Selects one of three bands for swept frequency and dispersion.

4-250 position (band A) lets you manually control panoramic display by using FREQUENCY and DISPERSION MHz controls.

B position selects preset CENTER FREQUENCY B and DISPERSION B controls for control of panoramic display.

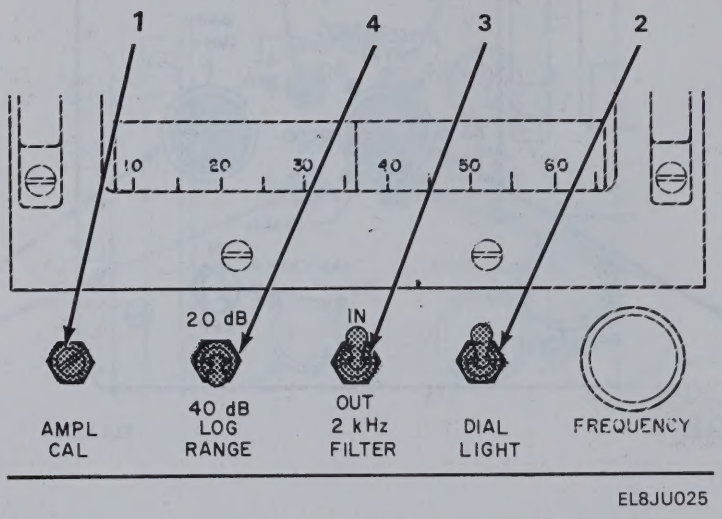
C position selects preset CENTER FREQUENCY C and DISPERSON C controls for control of panoramic display.

4 DISPERSION MHz control
Adjusts dispersion bandwidth of crt trace when BAND MHz switch is in 4-250 position. Selects fixed 10 MHz dispersion in detented 10 MHz position (full clockwise).

Adjusts width of band to be displayed.

2-2. PANORAMIC DISPLAY. – Continued

e. Amplitude/Dial Light Controls.



1 AMPL CAL control (screwdriver adjustable)
This is a maintenance adjustment.

2 DIAL LIGHT switch
Turns light for frequency dial on or off. Light is on when switch is up.

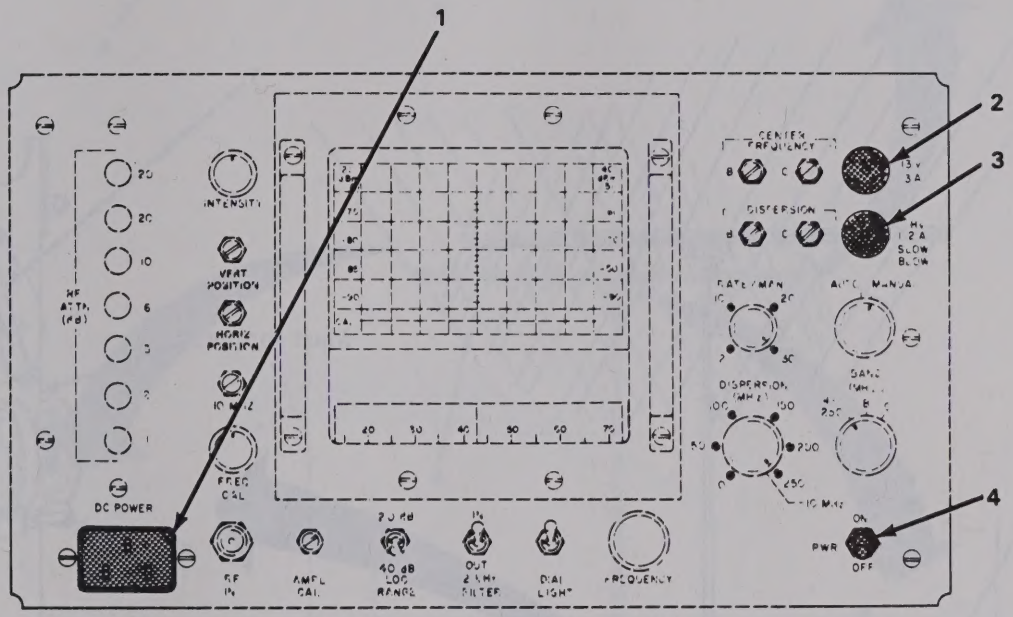
3 2 kHz FILTER switch
Reduces video bandwidth to 2 kHz when switch is in IN position. This reduces noise and sharpens crt trace.

When switch is in OUT position, video bandwidth is approximately 20 kHz.

4 LOG RANGE switch
Selects either 20 or 40 dB of vertical range on crt graticule. This means either 5 or 10 dB per major division.

When switch is in 20 dB position, amplitude of display is indicated by left-edge graticule scale (−70 to −90 dBm). When switch is in 40 dB position, amplitude of display is indicated by right-edge graticule scale (−50 to −90 dBm).

f. Power Controls and Connector.



EL8JU026A

1 DC POWER connector
Connects 13 Vdc power input to panoramic display from amplifier-control.

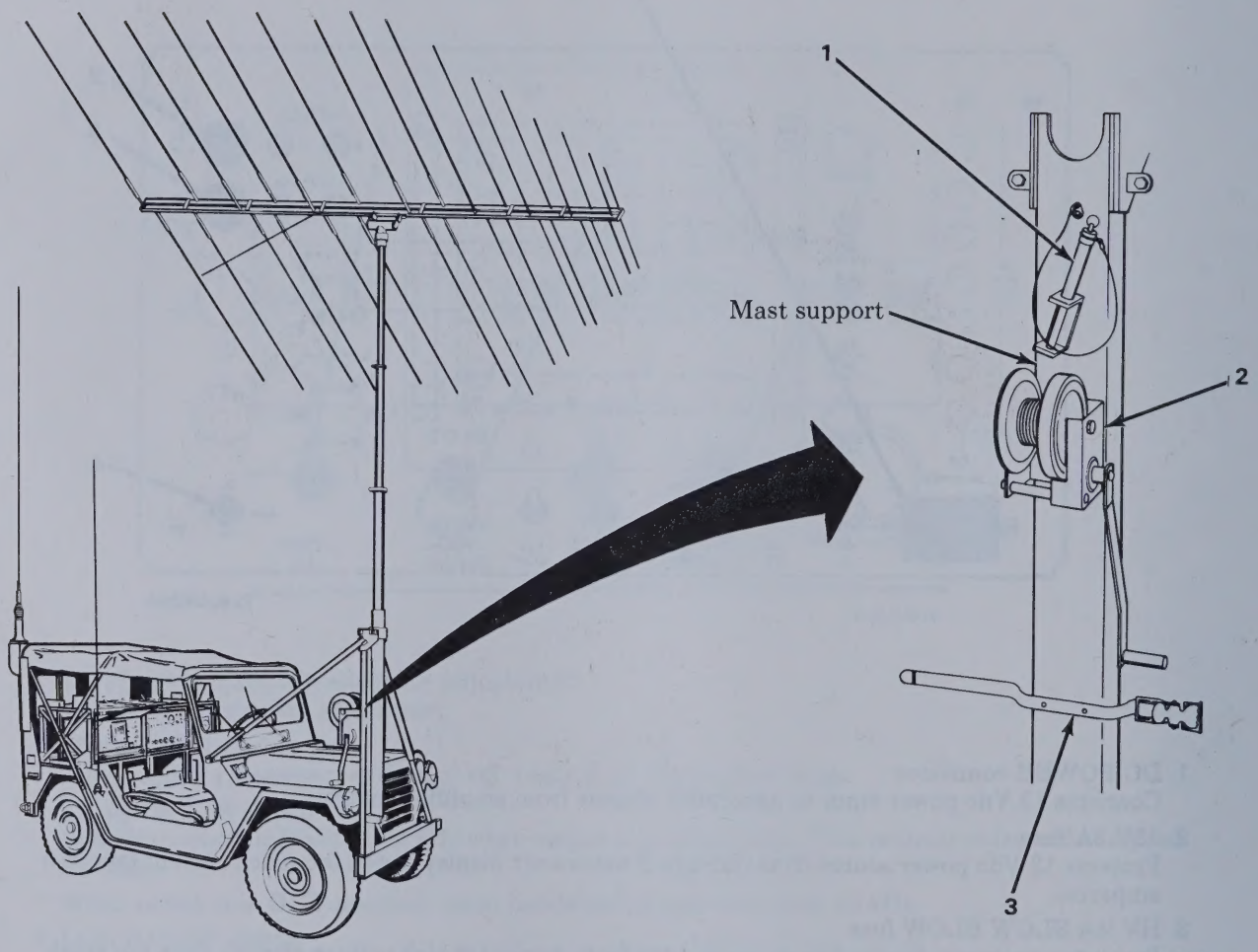
2 13V 3A fuse
Protects 13 Vdc power source from damage if panoramic display draws too much current (above 3 amperes).

3 HV ½A SLOW BLOW fuse
Protects panoramic display low power circuits from damage if high voltage circuits draw too much current (above ½ ampere). Slow blow means that fuse will not blow when normal short-term current surges above ½ ampere.

4 PWR switch
Turns panoramic display on or off.

2-3. LP ANTENNA/MAST AND MOUNT ASSEMBLIES.

a. Mast Support and Winch.

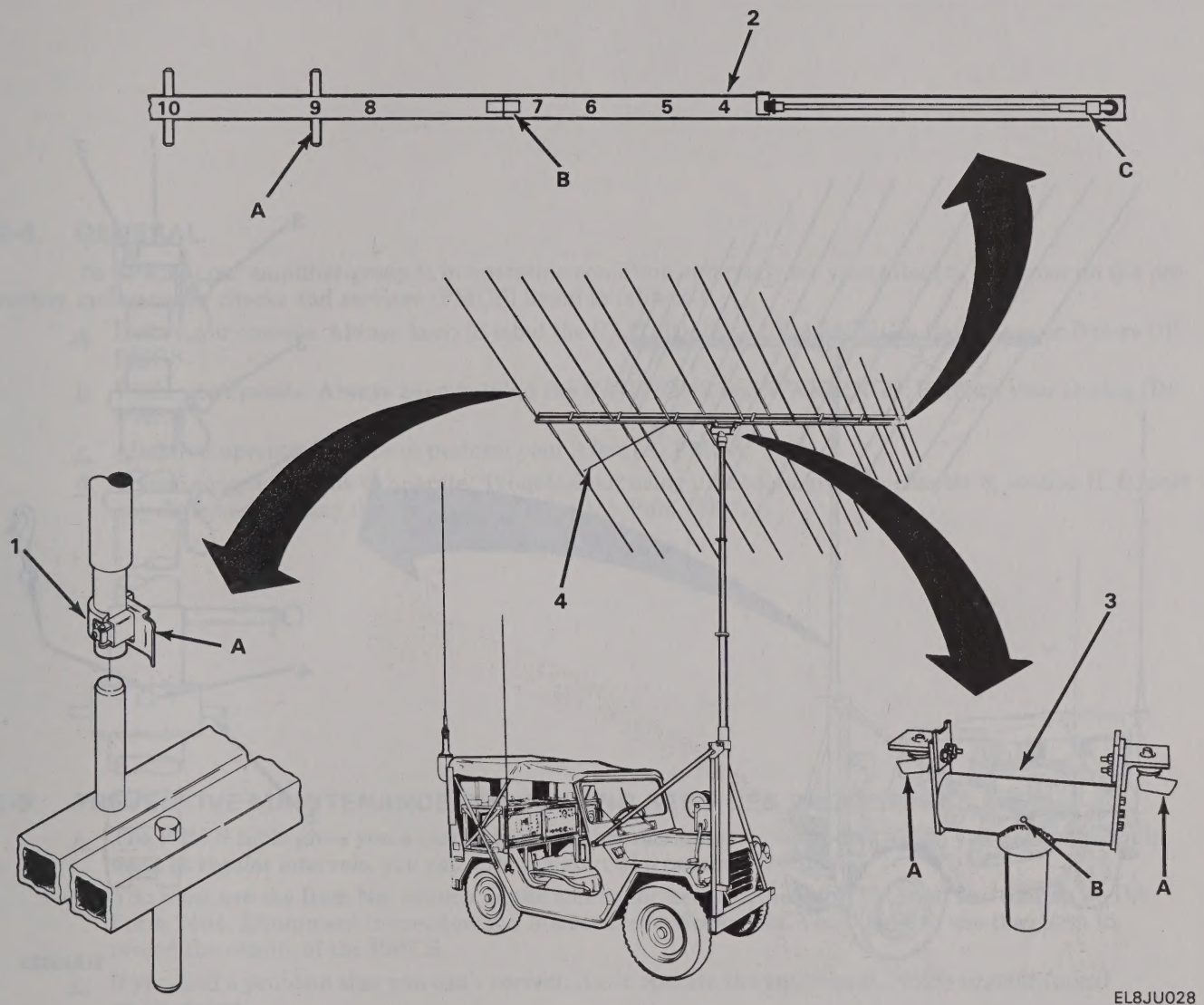


1 Quick-release pin
Locks bottom section of mast. Also used as a handle to adjust antenna azimuth.

2 Winch
Turning handle clockwise raises mast, counterclockwise lowers mast. When handle is released, winch locks in position.

3 Safety strap and buckle
Secures bottom section of mast to mast support for securing mast erect and relieving strain on winch cable.

b. LP Antenna Assembly.



1 Antenna element
Elements numbered 1 through 8 are secured by ¼ turn of element. All other elements are secured by a clamp (A).

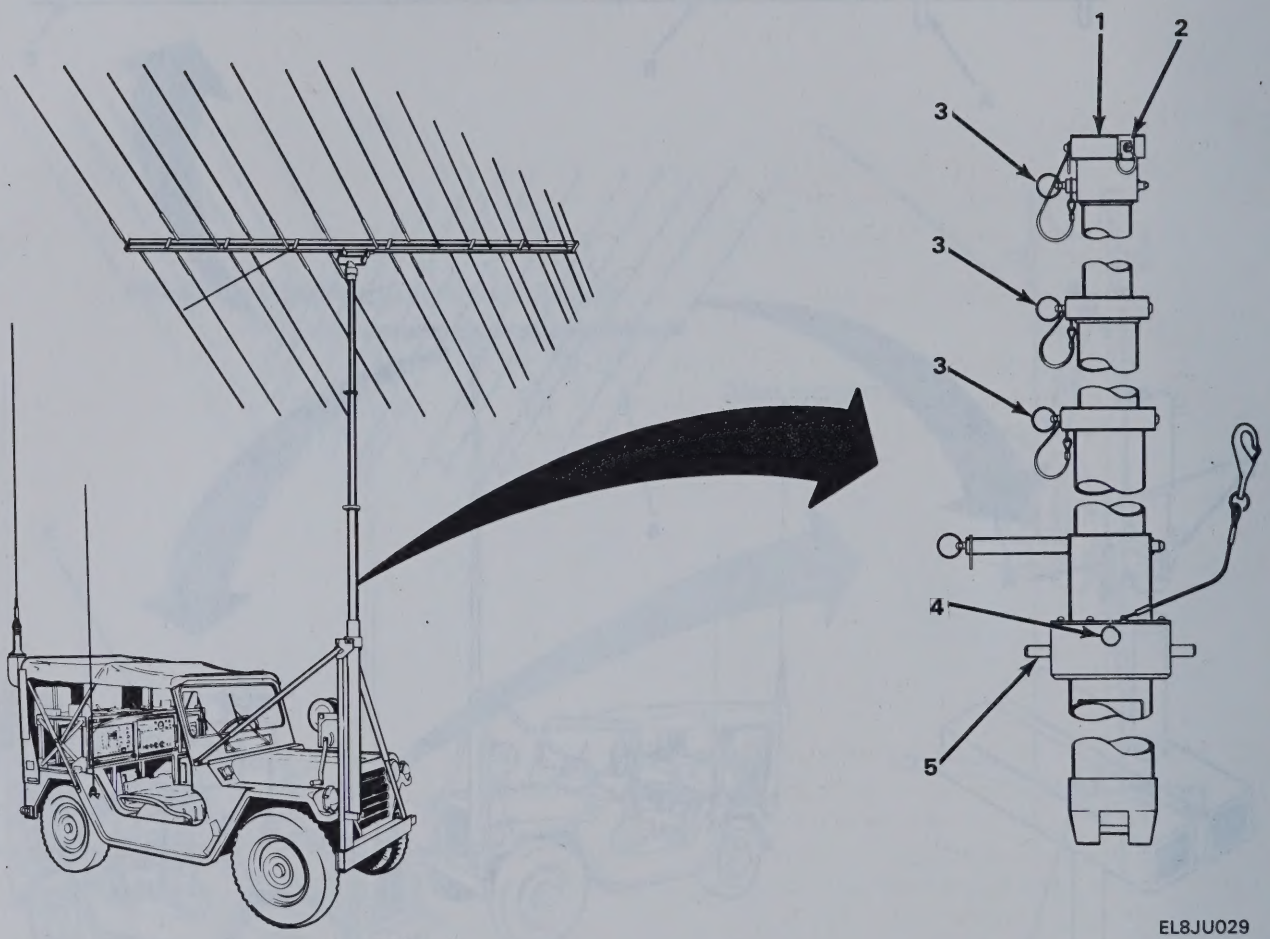
2 Antenna boom
(A) Stub for antenna elements.
(B) Clamps used to hold boom sections together.
(C) Coaxial cable connection.

3 Antenna mounting adapter
Fastens to antenna boom with two offset wing head studs (A). Quick-release pin (B) is used to adjust antenna polarization.

4 Stinger
Improves LP antenna performance.

2-3. LP ANTENNA/MAST AND MOUNT ASSEMBLIES. – Continued

c. Mast and Fittings.



1 Mast
Supports LP antenna.

2 Rings
Provide strain relief for rf cable.
Secure guy ropes if used.
Allow mast stowage.

3 Quick-release pins
Secure extended mast sections.

4 Retractable pin
Pulling pin out permits adjustment of antenna azimuth and resets at next detent.

5 Pivot pin
Mounts mast on mast support and allows for horizontal and vertical positioning of mast.

Section II. OPERATOR'S PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

2-4. GENERAL.

To be sure your amplifier group is in operating condition and ready for your mission, you must do the preventive maintenance checks and services (PMCS) listed in table 2-1.

a. Before you operate. Always keep in mind the CAUTIONS and WARNINGS. Perform your Before (B) PMCS.

b. While you operate. Always keep in mind the CAUTIONS and WARNINGS. Perform your During (D) PMCS.

c. After you operate. Be sure to perform your After (A) PMCS.

d. If your equipment fails to operate. Troubleshoot using procedure given in chapter 3, section II. Report any deficiencies using the proper forms. See DA Pam 738-750.

2-5. PREVENTIVE MAINTENANCE CHECKS AND SERVICES PROCEDURES.

a. The PMCS table gives you a quick check of what maintenance is needed. When you check the equipment at regular intervals, you can spot the start of a possible problem.

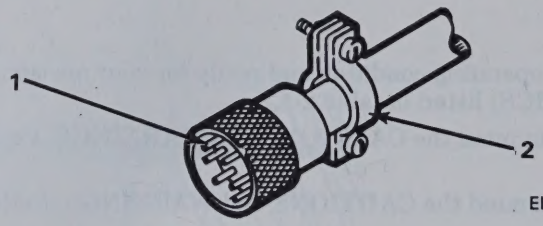
b. You must use the Item No. column as the source for item numbers for TM Item No. column on DA Form 2404, Equipment Inspection and Maintenance Worksheet. You'll have to use that form to record the results of the PMCS.

c. If you find a problem that you can't correct, don't operate the equipment. Notify organizational maintenance.

d. Routine cleaning is not listed as a PMCS check. Do cleaning whenever required. (Refer to paragraph 3-3.)

Table 2-1. Preventive Maintenance Checks and Services

B – Before Operation D – During Operation A – After Operation

Item No.	Interval B	Interval D	Interval A	Item to be Inspected Procedure	Equipment is not Ready/Available if:
1	●			Cables and Connections. Check cables for broken insulation. Check connectors for damaged pins (1) or loose cable clamp (2).	Broken insulation exposes bare wire.
					Pins are damaged.
	●			Check that all cables are securely fastened and properly connected (app E).	Connectors cannot be properly connected.
2	●			Equipment mounting. Make sure all equipment is secured in rack.	Equipment cannot be secured.
3	●		●	Controls and Switches on Front Panels. Check for loose knobs, controls, and switches.	Knob, control, or switch is loose.
4	●		●	Panoramic Display Plexiglass Shield. Check plexiglass shield for cracks, bad scratches, or fogging.	Signal trace cannot be seen.
5	●		●	Spare Fuses. Check for spare fuses inside panoramic display cover.	
6	●			Panoramic Display Cover. Check for damaged latch, cover support, or spare fuse holder.	
7	●		●	Amplifier-Control Fault Indicators. Perform self-test (para 2-7b).	Any lamp fails to light.
8	●	●		Panoramic Display. Check calibration (para 2-7c).	Display cannot be calibrated.
9	●		●	LP Antenna Assembly. Check antenna elements for damage. Check rf cable for damaged insulation or shield. Check cable connector for damaged threads.	Elements are bent. Shield is damaged. Connector cannot be secured tightly to J10 on amplifier-control.
10	●		●	Antenna Mast. Check for loose hardware. Check for defective quick-release pins. Check for cracks, splits, or heavy scoring.	Hardware is loose or quick-release pins or mast is damaged.
11	●		●	Antenna Mast Mounting Assembly. Inspect winch cable hook and strap and buckle to ensure they are not damaged. Inspect winch cable to ensure it is not frayed.	Cable hook, strap, or buckle is damaged.
12	●			Rack. Check rack for damage.	Damage interferes with safe operation or mounting of equipment.

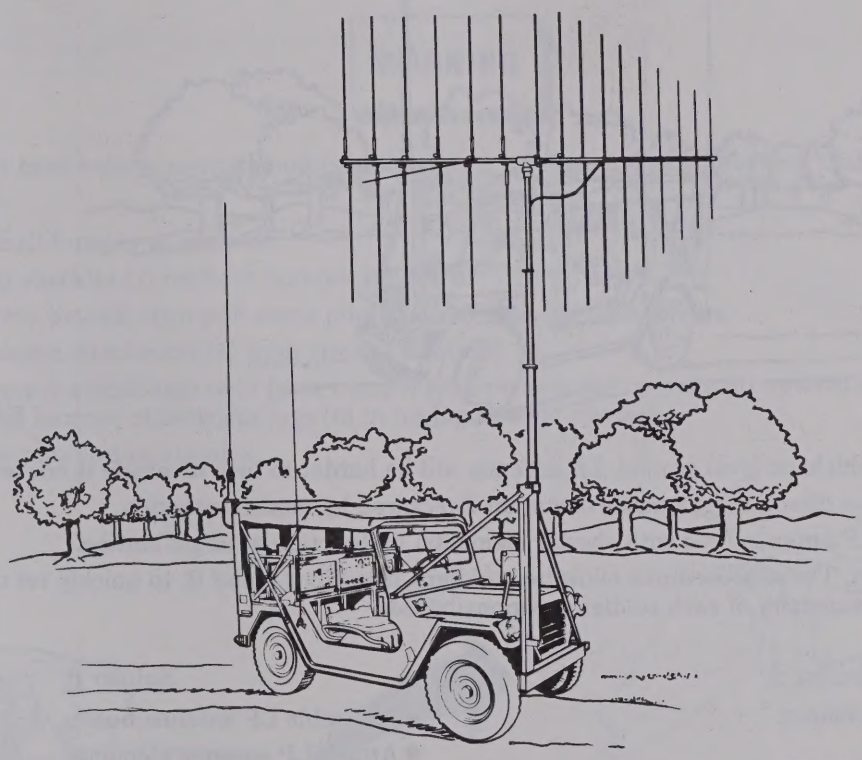
Section III. OPERATION UNDER USUAL CONDITIONS

2-6. ASSEMBLY AND PREPARATION FOR USE.

a. Siting.

WARNING

Position vehicle so there are no overhead obstructions. Avoid overhead power lines by at least 50 inches above highest point of LP antenna. Failure to heed this warning may cause injury or even death.



EL8JU032

NOTE

Obstacles such as trees or buildings can reduce the effectiveness of the jamming signal, just as they affect the communications signal of the RT unit. Also, if the LP antenna is allowed to touch anything, the reverse power will be increased, and full power output without a VSWR fault will be impossible. If possible, stay at least three to four antenna lengths from such obstacles.

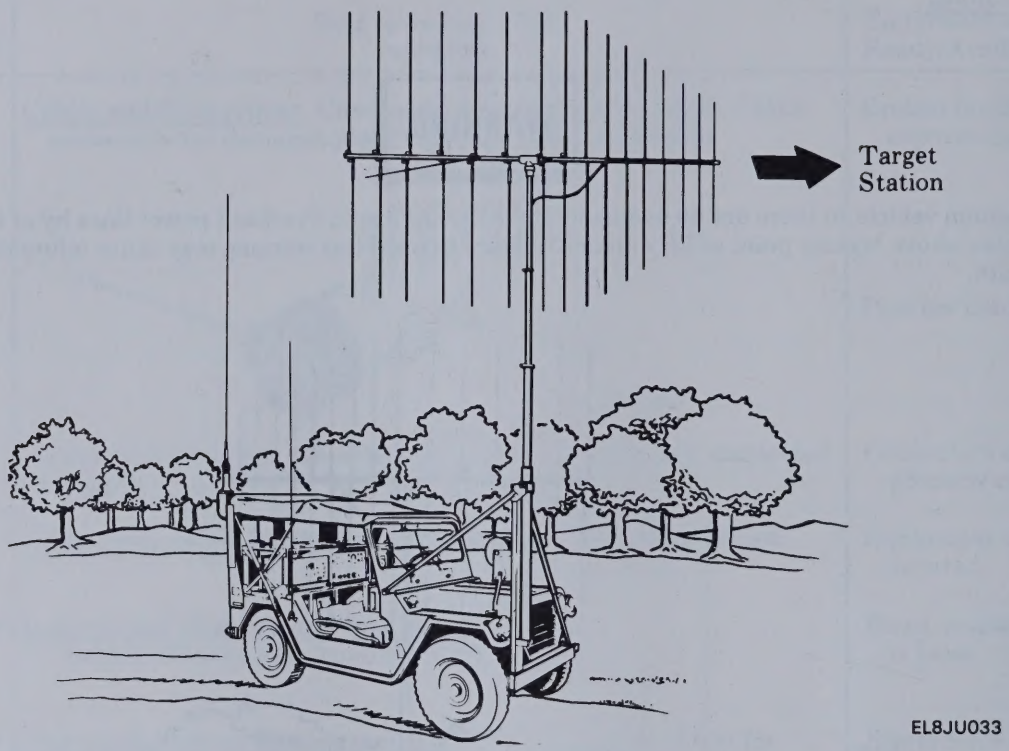
(1) Select highest point on terrain consistent with need for concealment.

(2) Avoid the following:

- Trees
- Hills
- Power lines
- Bridges
- Buildings

2-6. ASSEMBLY AND PREPARATION FOR USE. – Continued

b. Emplacement.



(1) Park vehicle on level ground. LP antenna will be harder to turn if vehicle is not level.

(2) Park in a direction for quick evacuation if required by tactical situation.

(3) Point LP antenna (end with shorter elements) in direction of target station.

c. Deployment. These procedures allow two soldiers, identified A and B, to quickly set up the mast and LP antenna. Here is a summary of each soldier's responsibilities:

Soldier A

- Install bumper attachment.
- Install mast mount.
- Set up side support strut.
- Set up front support strut.
- Install mast.
- Extend mast and hook up winch cable.
- Attach guy ropes (if necessary).
- Guide LP antenna.
- Prepare for mast raising.
- Raise mast.
- Set LP antenna azimuth.

Soldier B

- Assemble LP antenna boom.
- Attach LP antenna elements.
- Check mount adapter position.
- Install assembled LP antenna and position LP antenna stinger.
- Set LP antenna polarization.
- Flex radio antenna out of the erection path of mast and LP antenna, and connect rf cable to amplifier-control and cable strain relief.
- Set guy ropes (if necessary).

NOTE

Although the procedures indicate removal of items from each storage location as items are needed, deployment may be done faster by removing all items first and temporarily placing them on hood of vehicle.

(1) Setting up mast.

Soldier A

WARNING

Be careful not to allow bare flesh to touch metal during extreme cold. Flesh could stick and freeze to metal.

WARNING

Do not have vehicle engine running while setting up system. Failure to heed this warning may cause injury.

Step 1 – Install bumper atachment:

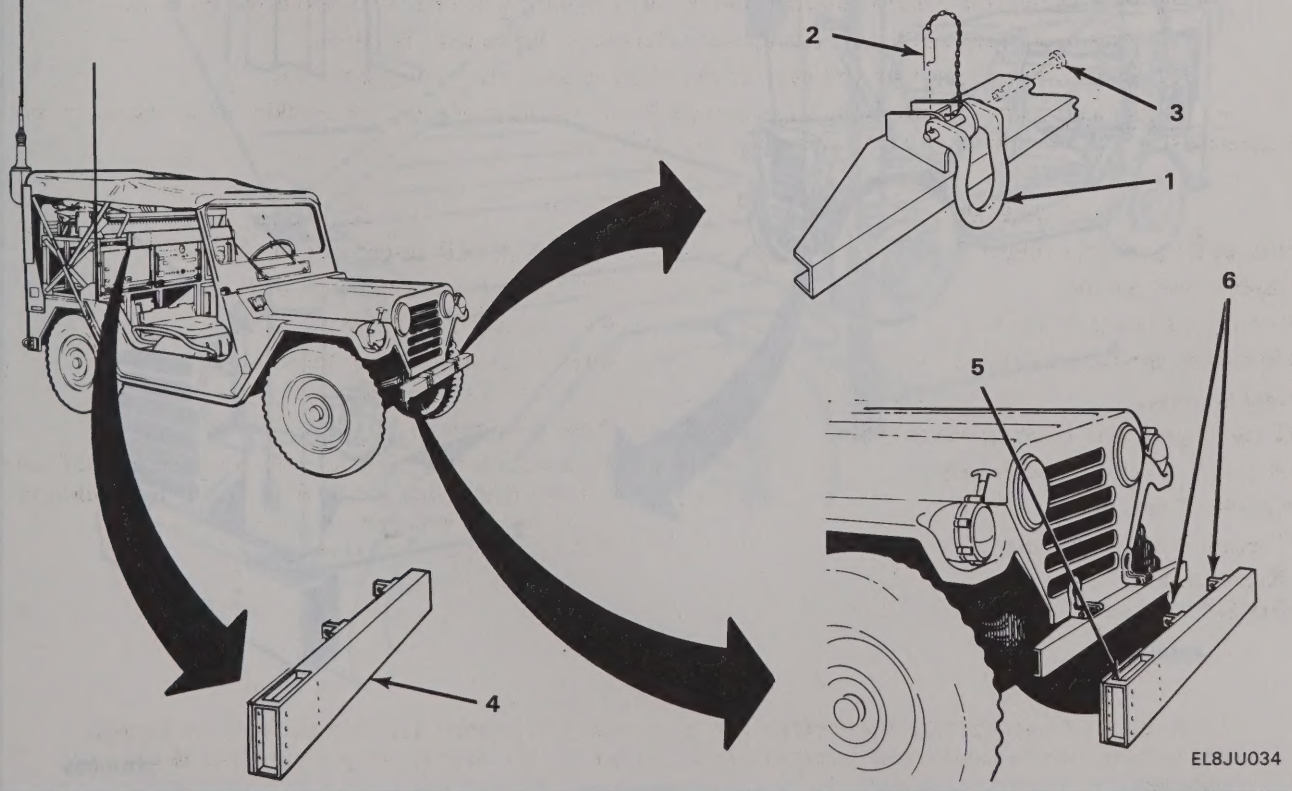
Pivot towing shackles (1) on front bumper rearward.

Remove safety pins (2) then pull clevis pins (3) from both towing shackles.

Remove bumper attachment (4) from storage location.

Position bumper attachment onto front bumper with rectangular opening (5) upward and on passenger's side. Position bumper attachment lugs (6) in towing shackle clevises.

Install clevis pins and safety pins.



2-6. ASSEMBLY AND PREPARATION FOR USE. – Continued

c. Deployment. – Continued

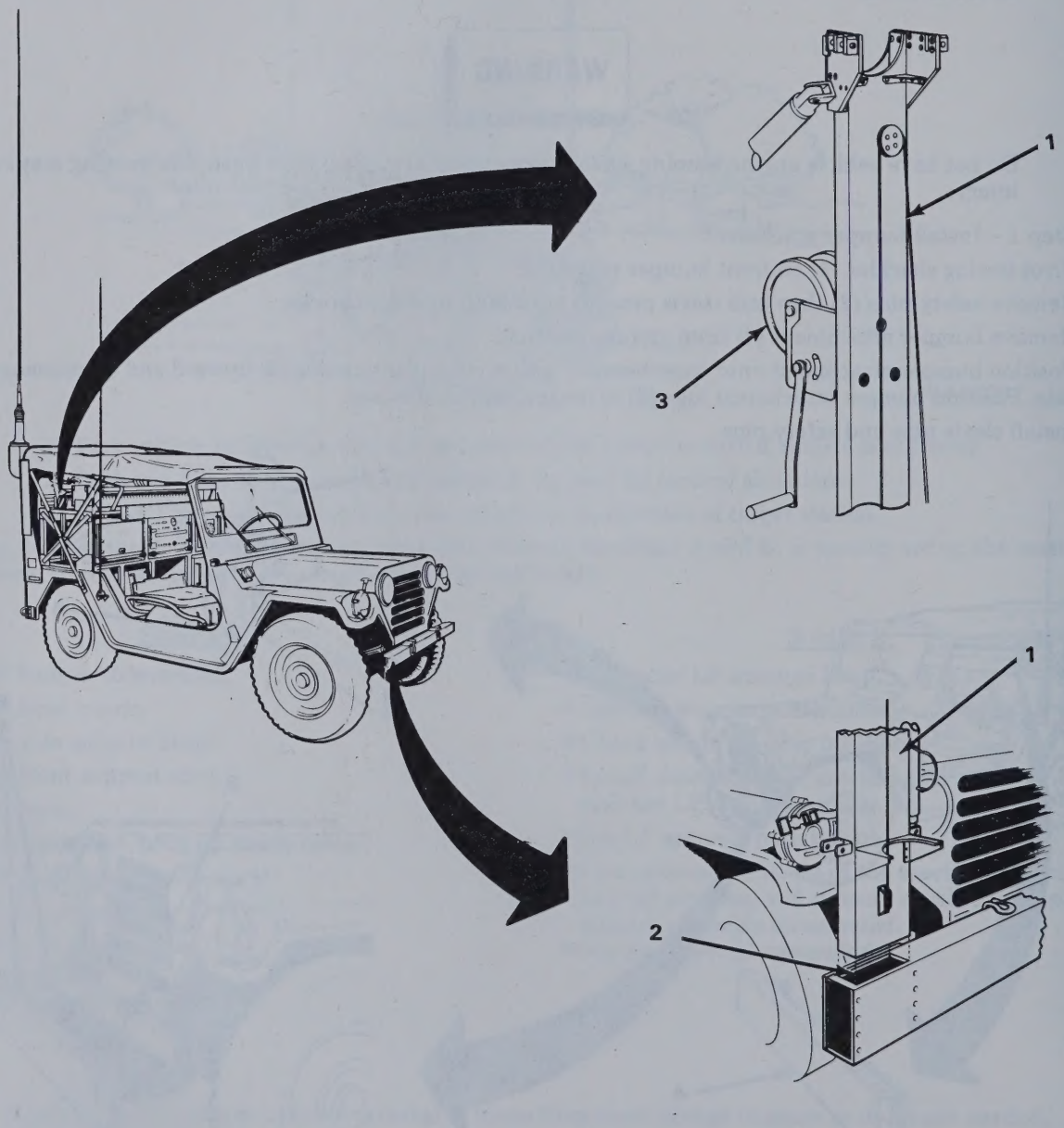
(1) Setting up mast. – Continued

Soldier A

Step 2 – Install mast mount:

Remove mast mount (1) from storage location.

Insert bottom of mast mount into rectangular opening (2) in bumper attachment. Winch (3) faces to rear of vehicle.



Soldier A

Step 3 – Set up side support strut:

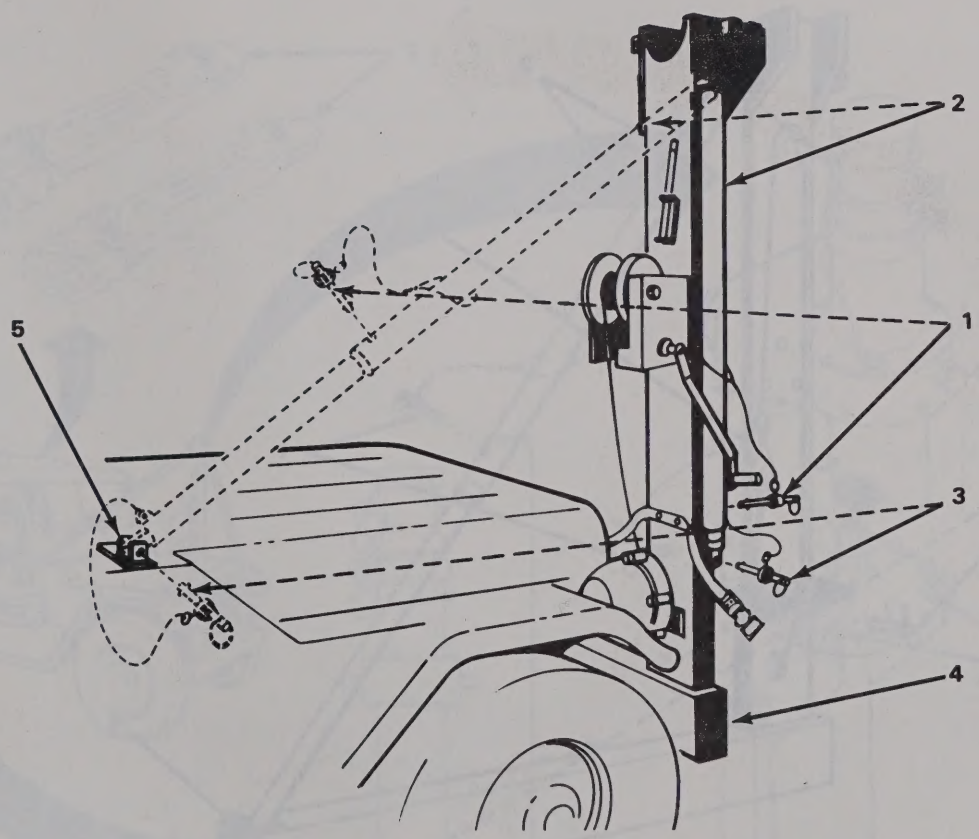
Remove center locking pin (1) from side support strut (2).

Hold side support strut by bottom section and remove bottom locking pin (3).

Swing side support strut back while keeping mast support (4) vertical and extend support strut until center locking pin (1) can be inserted through support strut.

Place bottom fitting of side support strut into mount (5) at base of windshield.

Install bottom locking pin (3) through windshield mount and support strut.



EL8JU036A

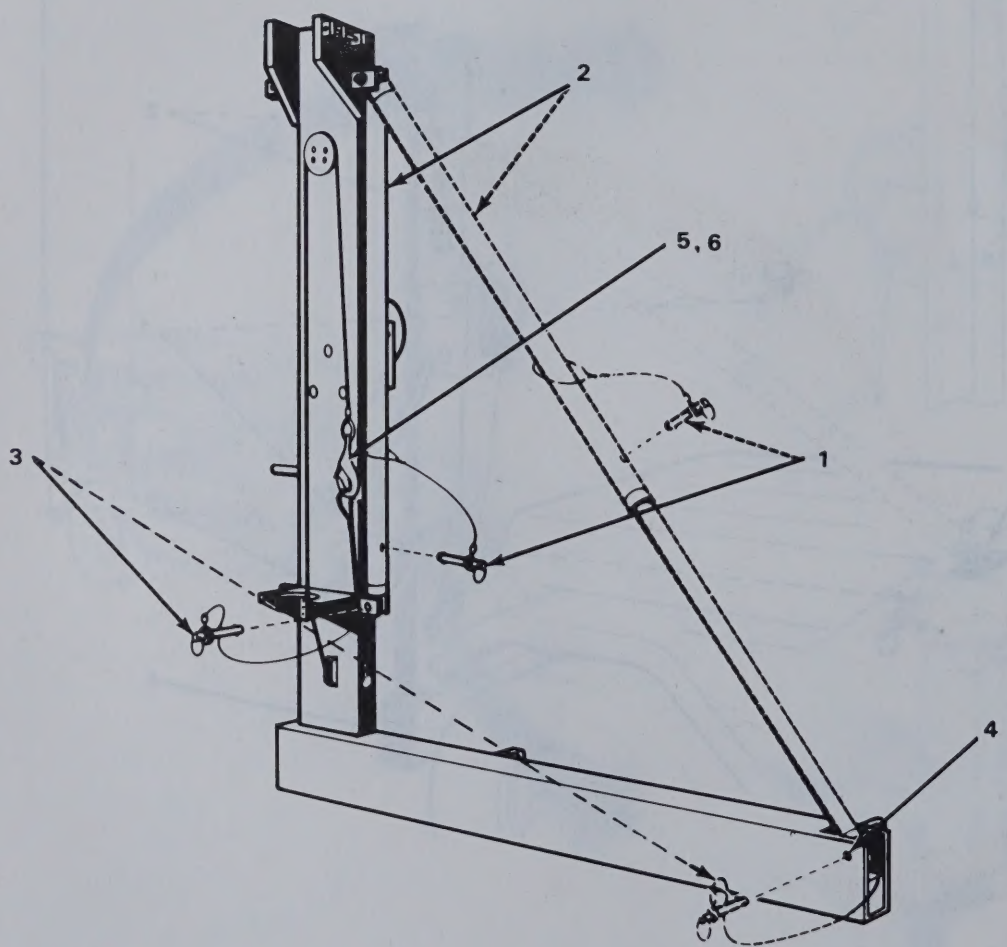
2-6. ASSEMBLY AND PREPARATION FOR USE. – Continued

c. Deployment. – Continued

(1) Setting up mast. – Continued

Soldier A

Step 4 – Set up front support strut:
Remove center locking pin (1) (quick-release pin) from front support strut (2).
Hold front support strut by bottom section and remove bottom locking pin (3) (quick-release pin).
Swing front support strut over and extend until bottom fitting can be placed in bumper attaching point (4).
Install bottom locking pin (3) through bumper attachment and support strut.
Install center locking pin (1) through support strut.
Disconnect winch cable hook (5) from elastic cord (6). Extend cable to a point in front of vehicle.



EL8JU037A

Soldier A

Step 5 – Install mast:

Remove two antenna element bags (1) from storage locations and place on ground convenient to where antenna will be assembled.

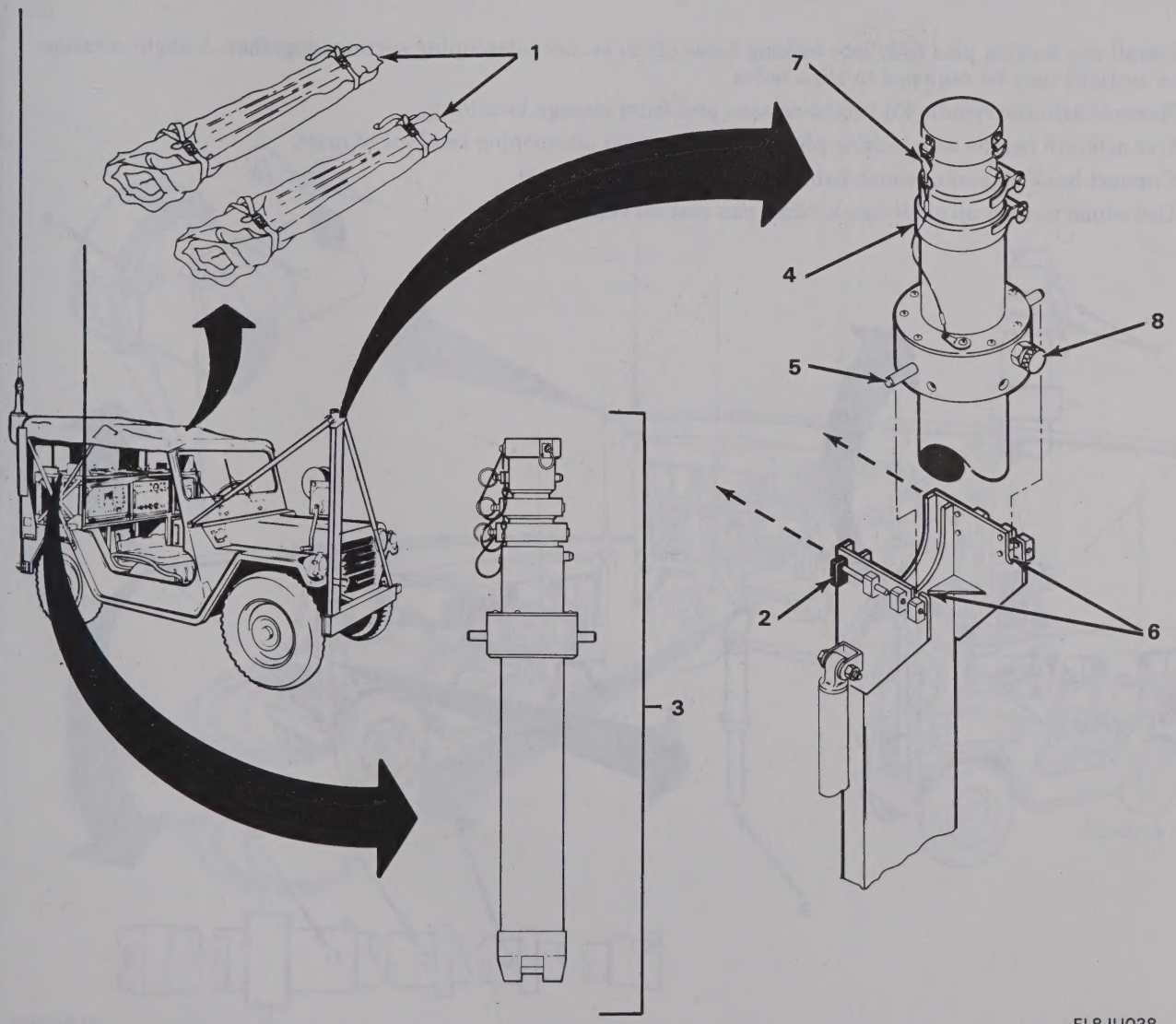
Slide both mast locking pins (2) on mast mount to rear.

Remove mast (3) from storage location.

Make sure retractable pin (8) faces forward and install mast vertically in mast mount with telescoping sections (4) upward and pivot pins (5) in pivot slots (6).

Slide both mast locking pins forward.

Unhook lanyard (7) holding mast sections together.



2-6. ASSEMBLY AND PREPARATION FOR USE. – Continued

c. Deployment. – Continued

(1) Setting up mast. – Continued

Soldier A

Step 6 – Extend mast:

Pivot mast to horizontal position and extend telescoping sections.

Remove two locking pins (1) (quick-release pins) from storage locations on mast.

NOTE

All quick-release pins must be horizontal.

NOTE

Extend mast to its full length. This will allow safe radiation of signal when you transmit.

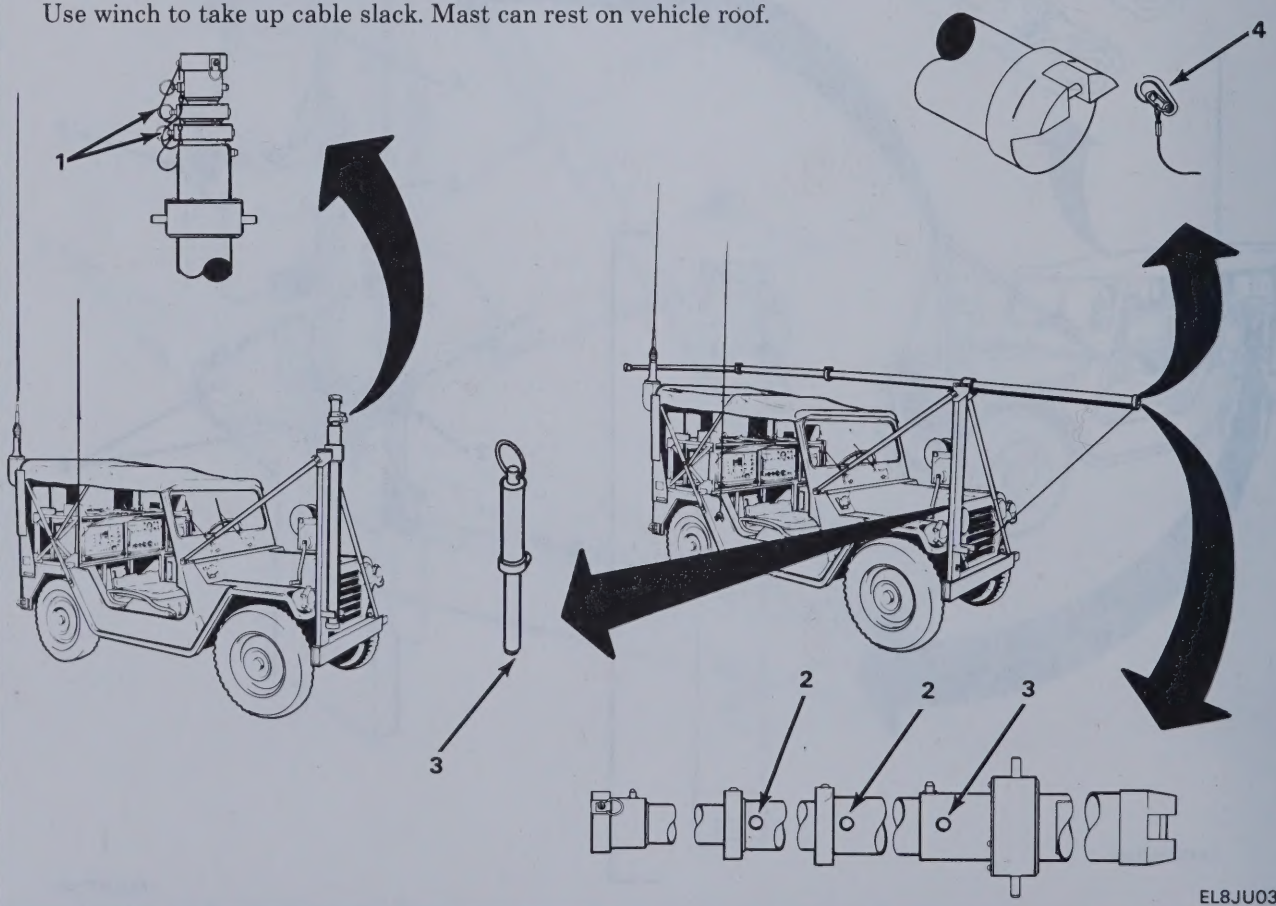
Install two locking pins fully into locking holes (2) to secure telescoping sections together. A slight rotation of sections may be required to aline holes.

Remove azimuth handle (3) (quick-release pin) from storage location.

Use azimuth handle as a locking pin to secure bottom telescoping sections of mast.

Connect hook on end of winch cable (4) to pin at base of mast.

Use winch to take up cable slack. Mast can rest on vehicle roof.



Soldier A

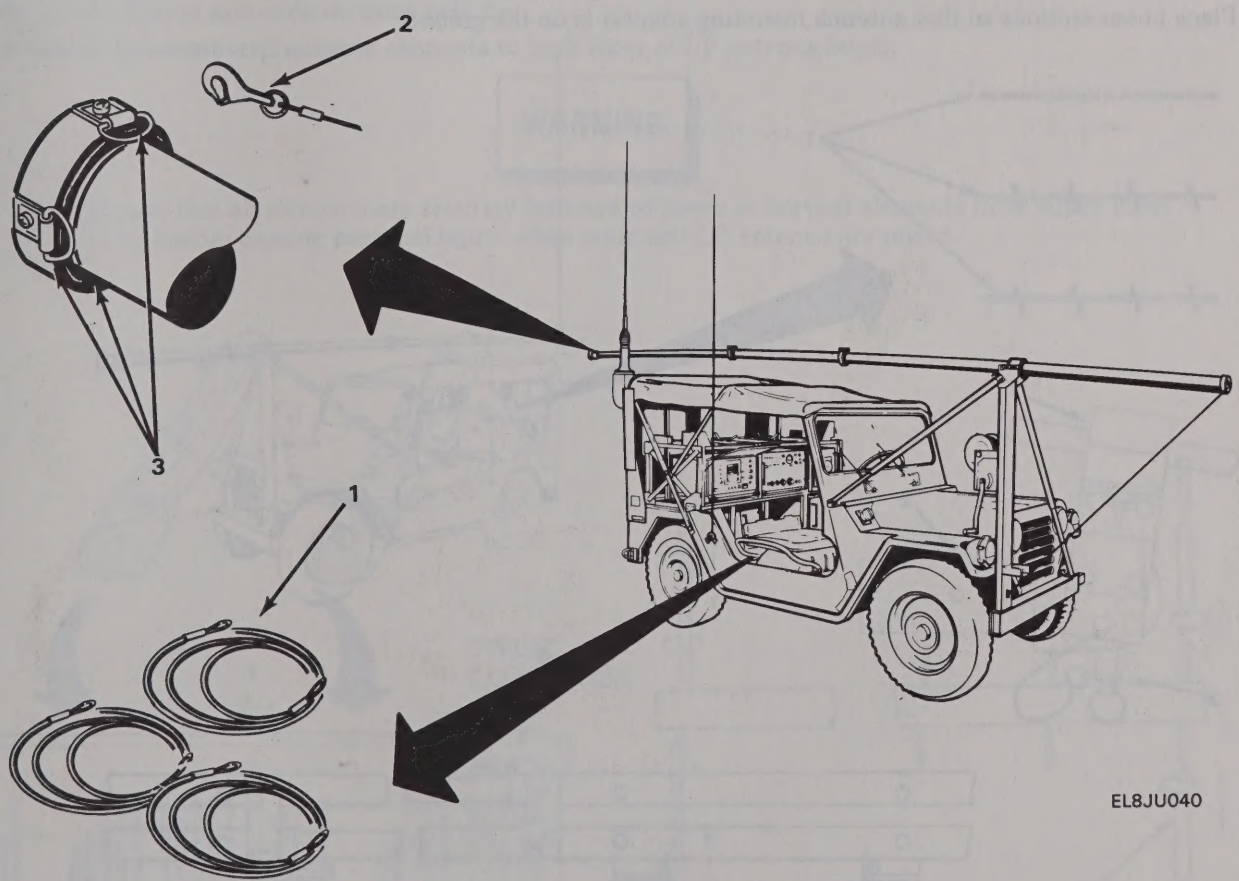
Step 7 – Attach guy ropes:

CAUTION

Guy ropes must be used to stabilize the antenna if wind speeds of over 35 mph or icing conditions are expected. Failure to do so may cause antenna damage.

Remove three guy ropes (1) from tool compartment.

Uncoil guy ropes and attach each one to the top of mast using clips on guy rope ends (2) and hinges on mast (3).



2-6. ASSEMBLY AND PREPARATION FOR USE. – Continued

c. Deployment. – Continued

(2) Putting antenna together.

Soldier B

Step 1 – Assemble LP antenna boom:

WARNING

Be careful not to allow bare flesh to touch metal during extreme cold. Flesh could stick and freeze to metal.

Remove three LP antenna boom sections (1) from storage locations on top of equipment rack.

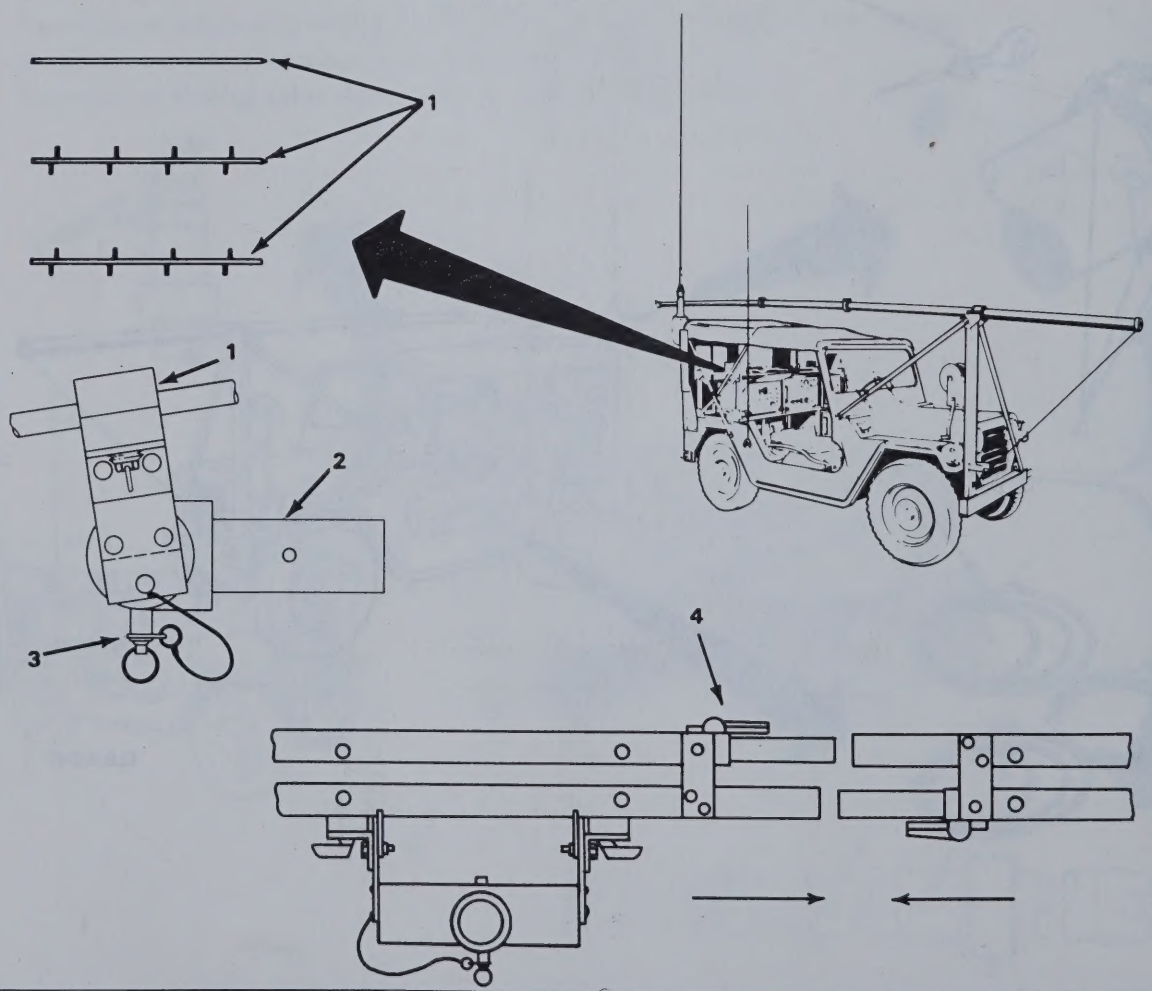
Set antenna mount adapter (2) for vertical polarization by removing polarization locking pin (3), rotating mount adapter to the side, and inserting polarization locking pin. Antenna mount adapter (2) must point to the side at about 100° with respect to the side of the boom section (1).

The three LP antenna boom sections are engraved with numbers of corresponding antenna elements.

Slide LP antenna boom sections together so that numbering reads in order from 1 to 16.

Engage latches (4) to secure LP antenna boom sections together.

Place boom sections so that antenna mounting adapter is on the ground.



EL8JU041A

Soldier B

Step 2 – Attach antenna elements:

Open two antenna element bags (1).

NOTE

Elements (2), 1 through 8 attach to LP antenna boom by bayonet-type attachment. Elements 9 through 16 use captive latches. You may start with antenna element 1 or 16.

Starting with antenna element for one end and working toward the other end:

- Remove element from bag.

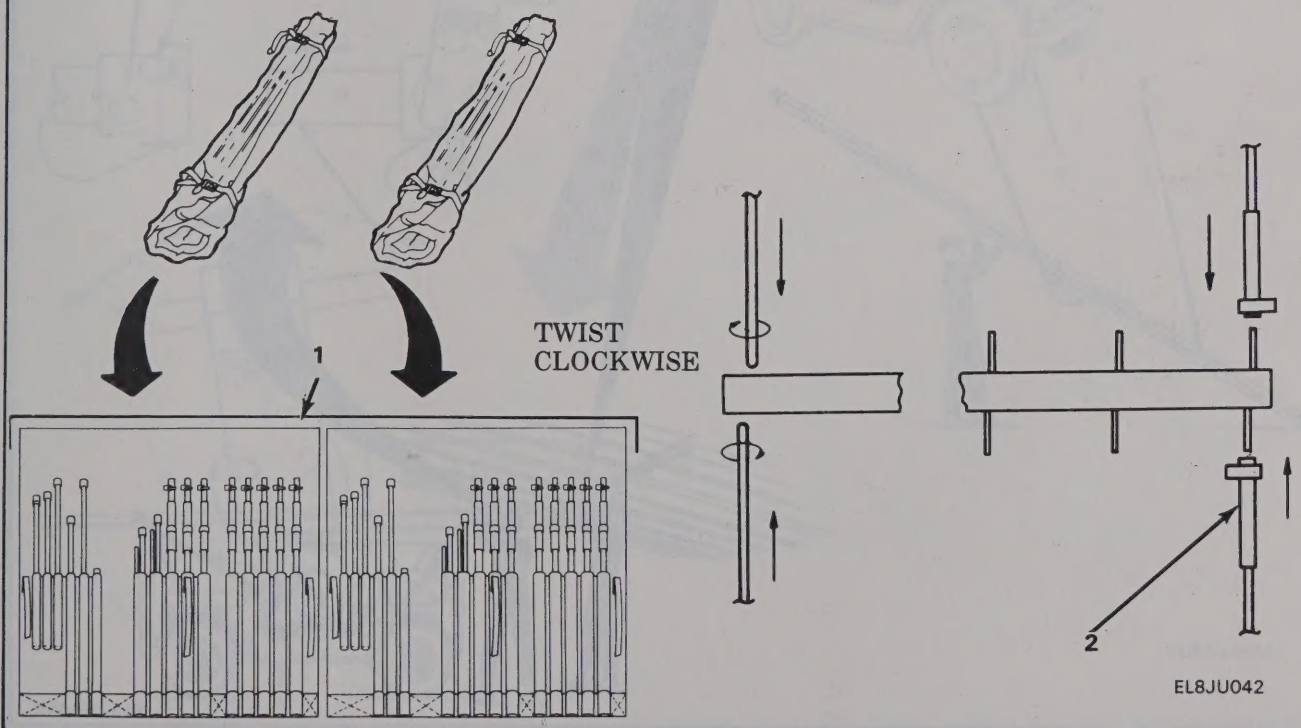
CAUTION

Avoid unnecessary overstretching, excessive tension, and abuse of shock cord retainers on folding elements. Otherwise, retainers can break loose.

- Unfold element and slide sections together.
- Attach like-numbered antenna elements to both sides of LP antenna boom.

WARNING

Ensure that all elements are securely fastened to boom to prevent elements from falling loose and possibly causing personal injury when mast and LP antenna are raised.

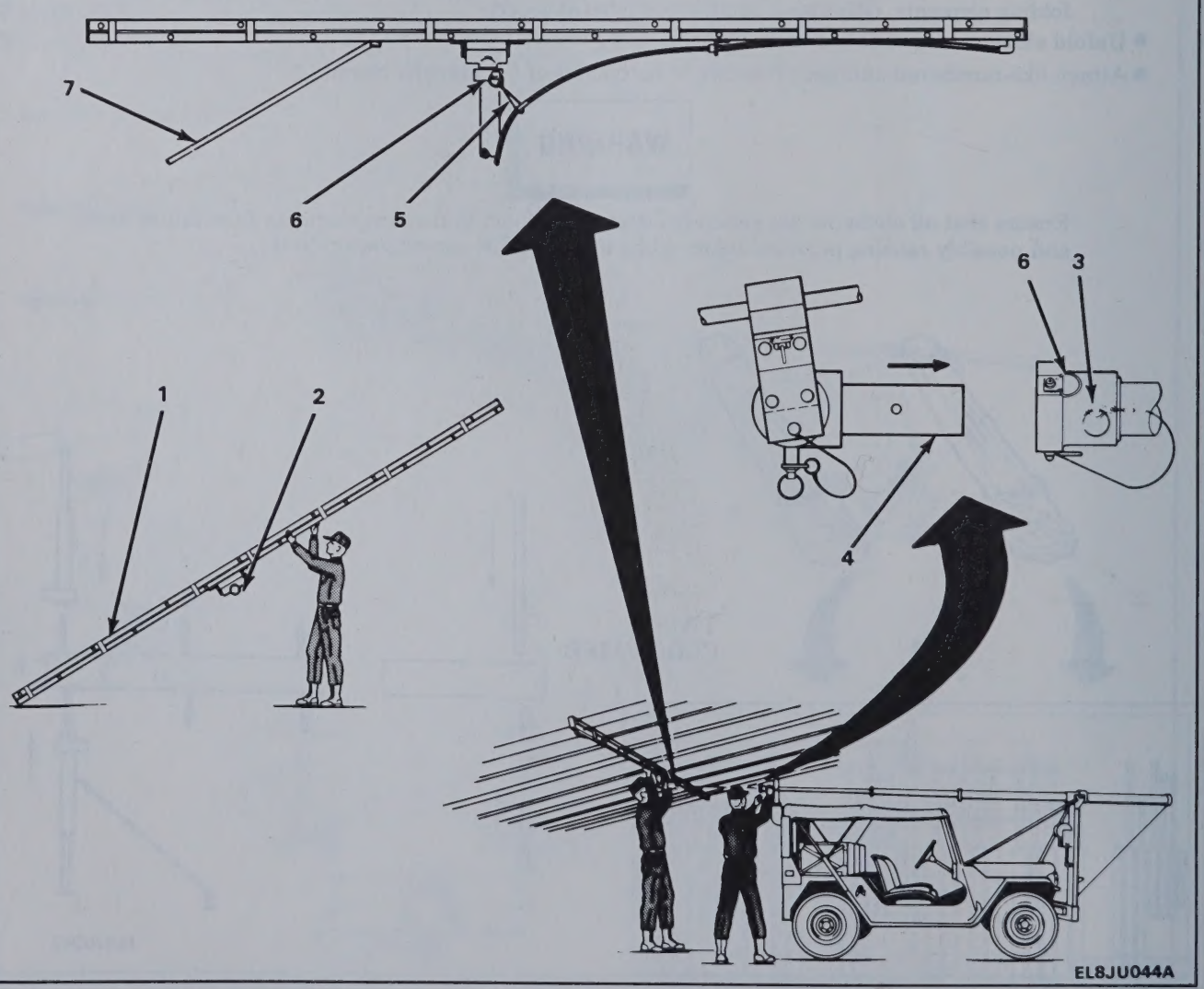


2-6. ASSEMBLY AND PREPARATION FOR USE. – Continued

c. Deployment. – Continued

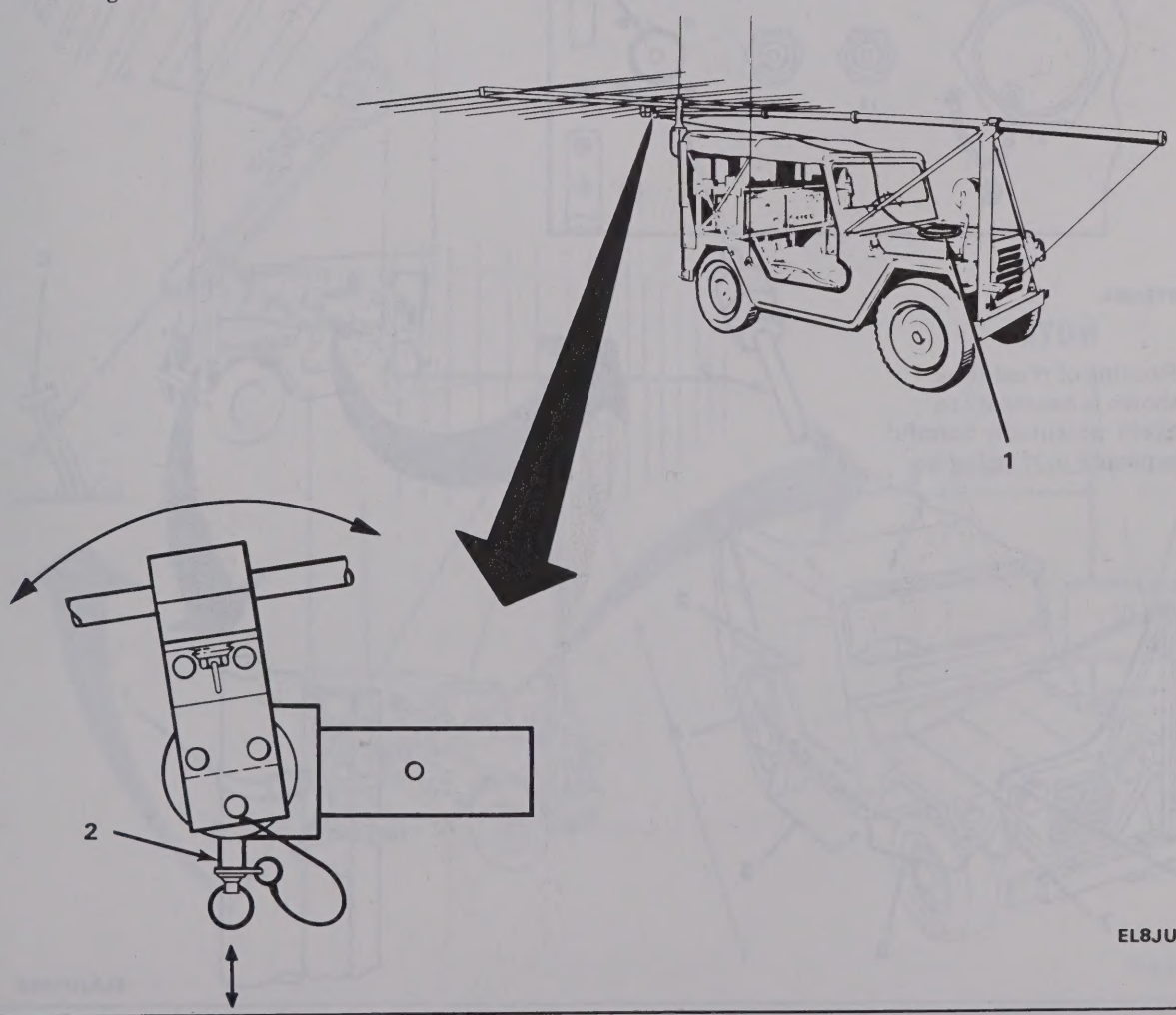
(3) Mounting and raising antenna.

Soldier A	Soldier B
Step 1 – Guide LP antenna: Pick up antenna (1) at one end and walk toward the antenna mounting adapter (2). Lift antenna and carry it to the mast. Insert antenna mount adapter (4) into mast socket. **CAUTION** While mast is horizontal, do not apply any force that might cause imbalance at antenna mounting adapter. Otherwise, you might damage mast.	Step 1 – Install assembled antenna: Pull antenna locking pin (3) (quick-release pin) from top of mast. Guide LP antenna as soldier A lifts it for fitting to antenna mast and insert locking pin (3). Hook cable support (5) onto one of the guy rope rings (6) at top of mast. Lower stinger element (7) and tighten wing nut.



(3) Mounting and raising antenna. – Continued

Soldier A	Soldier B
Step 2 – Preparation for mast raising: Unwind rf cable (1) toward front of vehicle, inboard from side support strut. Lay cable on top of hood. If needed to set LP antenna polarization, raise mast for element-to-ground clearance. **WARNING** Never drive vehicle while LP antenna is attached to mast. Personal injury can result from fragments of an LP antenna and/or mast which has been damaged.	Step 2- Set antenna polarization: As installed, antenna is set for vertical polarization. To select 45° polarization, remove polarization pin (2) (quick-release pin) from mount adapter, turn LP antenna to 45°, insert locking pin. To select horizontal polarization, pull polarization locking pin from mount adapter, tilt antenna elements vertically while soldier A uses winch to raise mast for ground-to-element clearance. Insert locking pin.



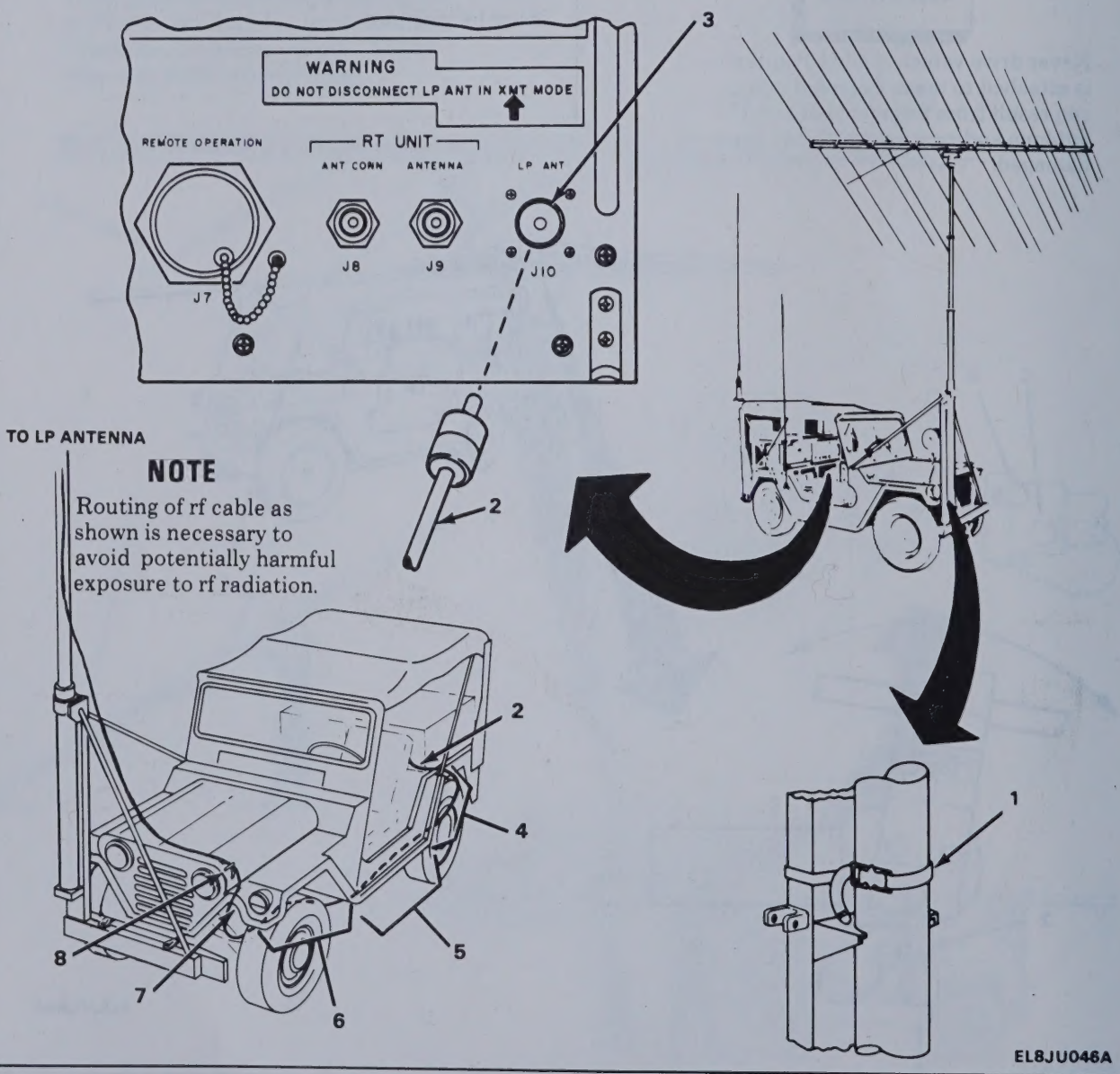
EL8JU045A

2-6. ASSEMBLY AND PREPARATION FOR USE. – Continued

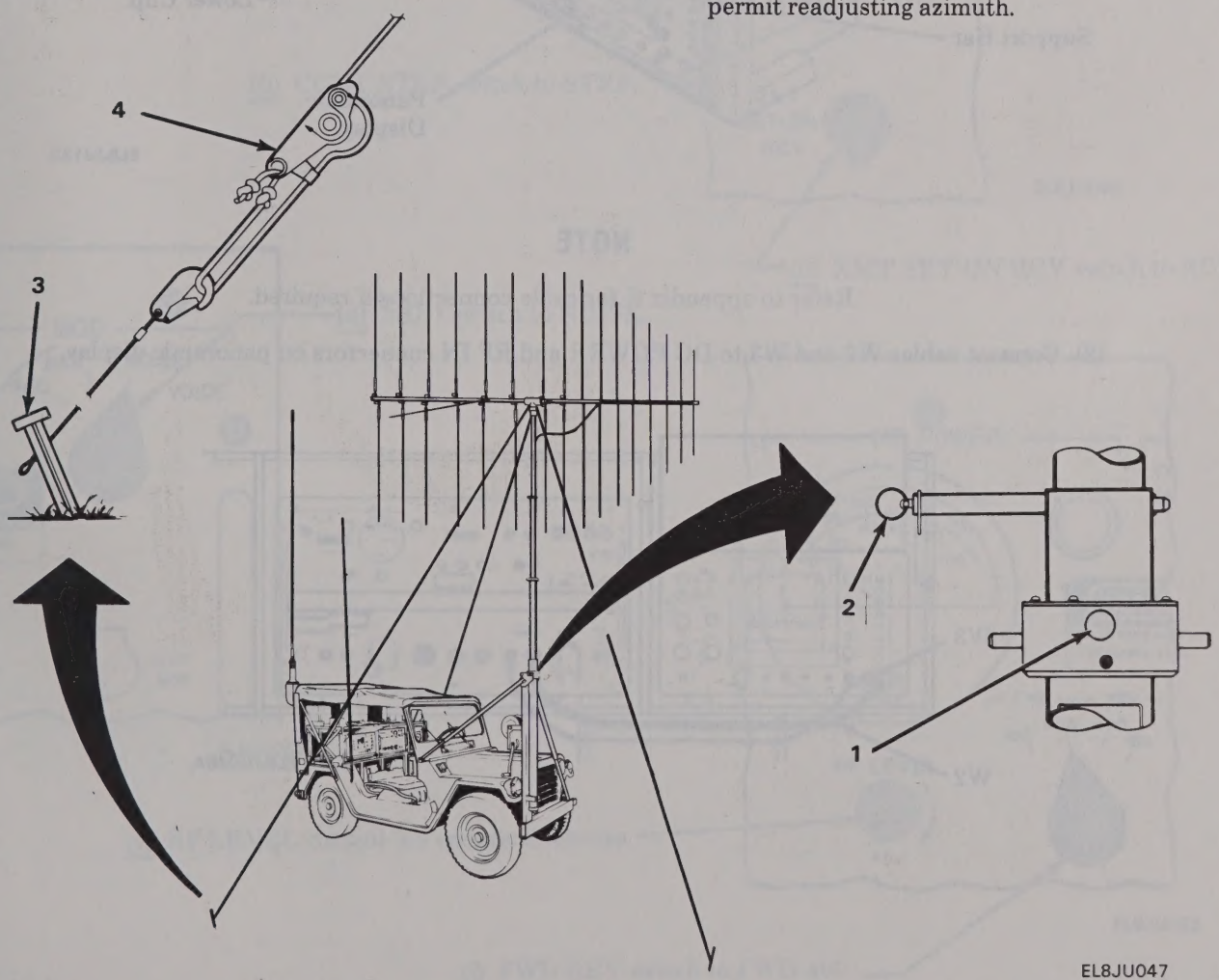
c. Deployment. – Continued

(3) Mounting and raising antenna. – Continued

Soldier A	Soldier B
Step 3 – Raise mast: Turn winch handle clockwise to raise mast to vertical position. Buckle strap (1) tightly at base of mast to secure mast to mast support.	Step 3 – Connect and route rf cable: Flex radio whip antenna forward. On driver's side of vehicle, connect rf cable (2) to amplifier-control LP ANT connector J10 (3). Tuck rf cable under rear wheel well (4), running board panel (5), front fender (6), and thru fender scallop (7). Take up slack in rf cable by hooking it under rear ear of hood hasp (8).



Soldier A	Soldier B
Step 4 – Set LP antenna azimuth: Pull retractable pin (1). **CAUTION** To avoid possible breakage of azimuth handle (2), never use any kind of extension device to gain leverage. Move LP antenna to desired direction (in 30° steps) by using azimuth handle (2). Retractable pin locks in place. Tell soldier B to set guy ropes (only if high winds are expected).	Step 4 – Set guy ropes (only if high winds are expected): Remove stakes and hammer from tool compartment. Connect guy rope to stake when soldier A says so. Extend guy rope and drive stake (3) into ground about 20 feet away from mast at a slight angle. Repeat for remaining guy ropes. Adjust tension on all guy ropes using snubbers (4). **NOTE** When antenna is vertically polarized, guy ropes may have to be slackened to permit readjusting azimuth.



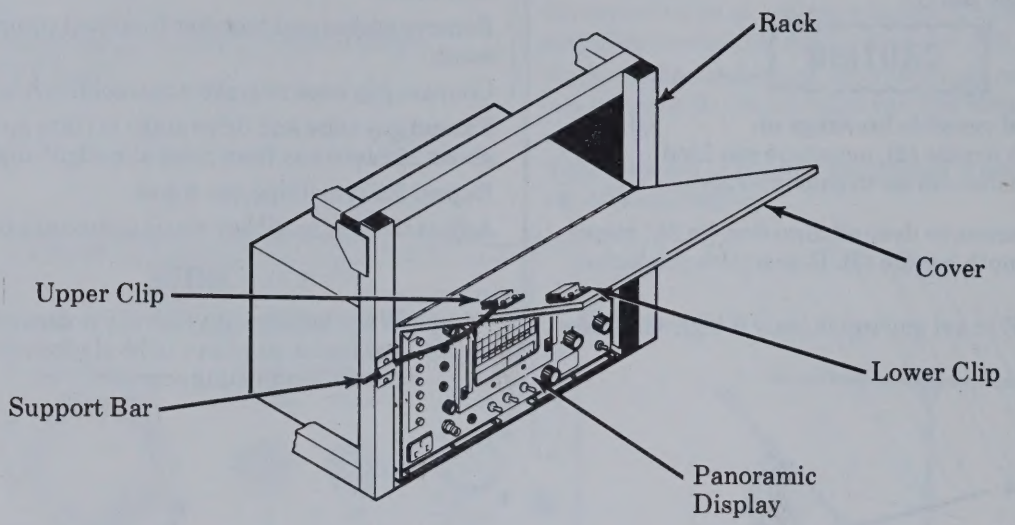
2-7. INITIAL ADJUSTMENTS, DAILY CHECKS, AND SELF-TEST.

a. Initial Adjustments. The following are preliminary steps to be done before any operator tests.

NOTE

This procedure is to prevent accidental transmission.

(1) Open cover of panoramic display and hook support bar into upper clip on cover so that cover stays open.

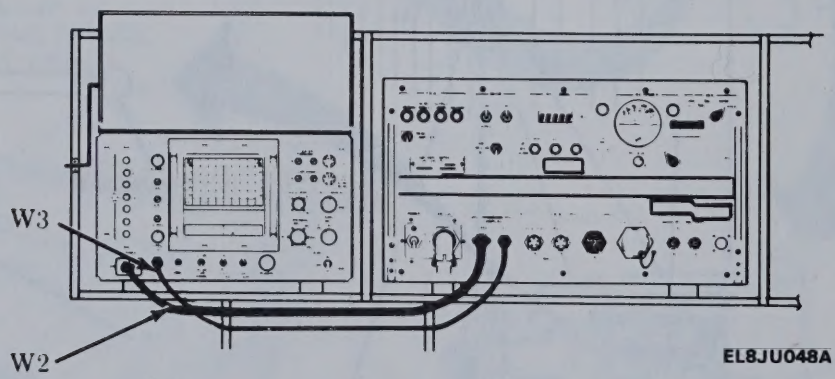


EL8JU133

NOTE

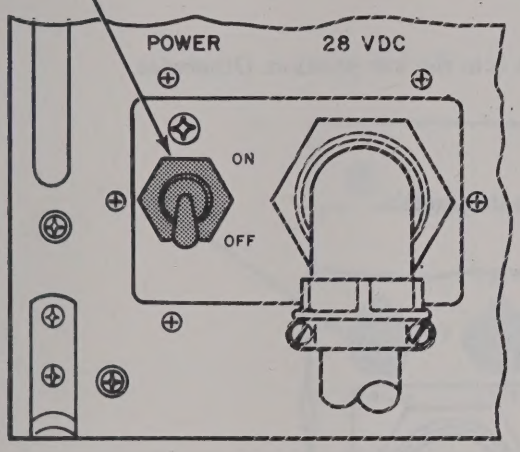
Refer to appendix E for cable connections if required.

(2) Connect cables W2 and W3 to DC POWER and RF IN connectors on panoramic display.



EL8JU048A

(3) Set amplifier-control POWER circuit breaker to OFF.



EL8JU049

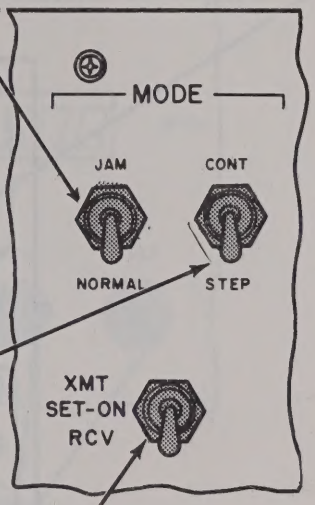
CAUTION

Before starting engine make sure all power switches are OFF. Otherwise equipment may be damaged.

(4) Start vehicle engine.

(5) Set remaining controls of amplifier-control as follows:

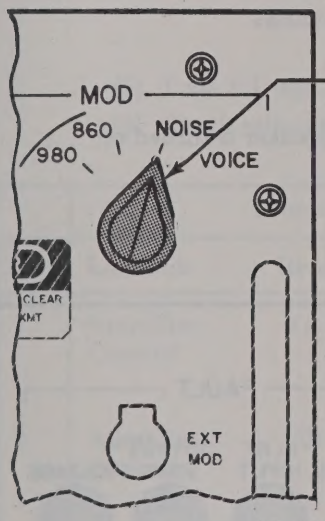
(a) JAM NORMAL switch to NORMAL.



EL8JU050

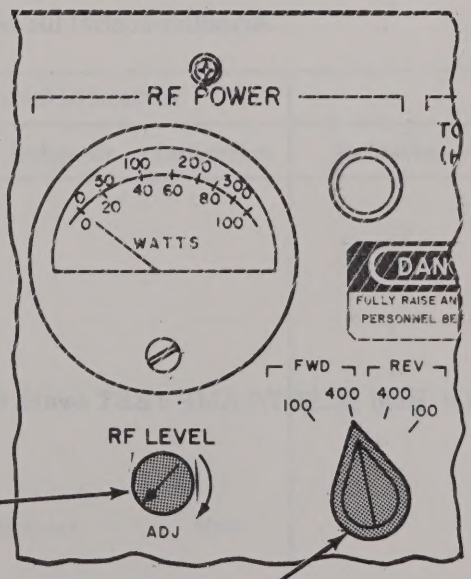
(b) CONT STEP switch to STEP.

(c) XMT SET-ON RCV switch to RCV.



EL8JU051

(d) MOD switch to NOISE.



EL8JU052

(e) RF LEVEL control full counterclockwise.

(f) FWD REV switch to FWD 400.

2-7. INITIAL ADJUSTMENTS, DAILY CHECKS, AND SELF-TEST. – Continued

b. Self-test.

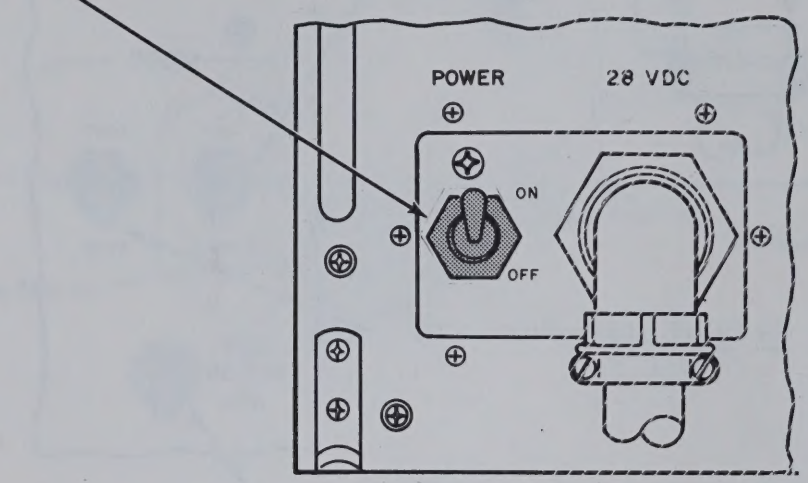
(1) Perform initial adjustments given in paragraph 2-7a.

NOTE

Make sure that the power switch on the RT unit is in the low position. Otherwise, amplifier-control will go into high rf input fault.

(2) Set RT unit power switch to low.

(3) Set amplifier-control POWER circuit breaker to ON.



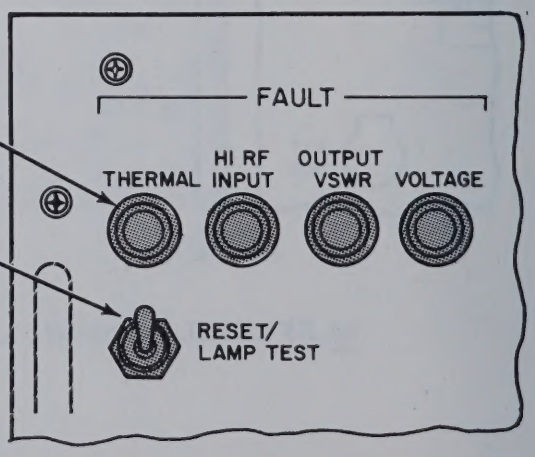
EL8JU055

NOTE

Amplifier-control blowers can be heard when POWER circuit breaker is turned on.

Lamps light

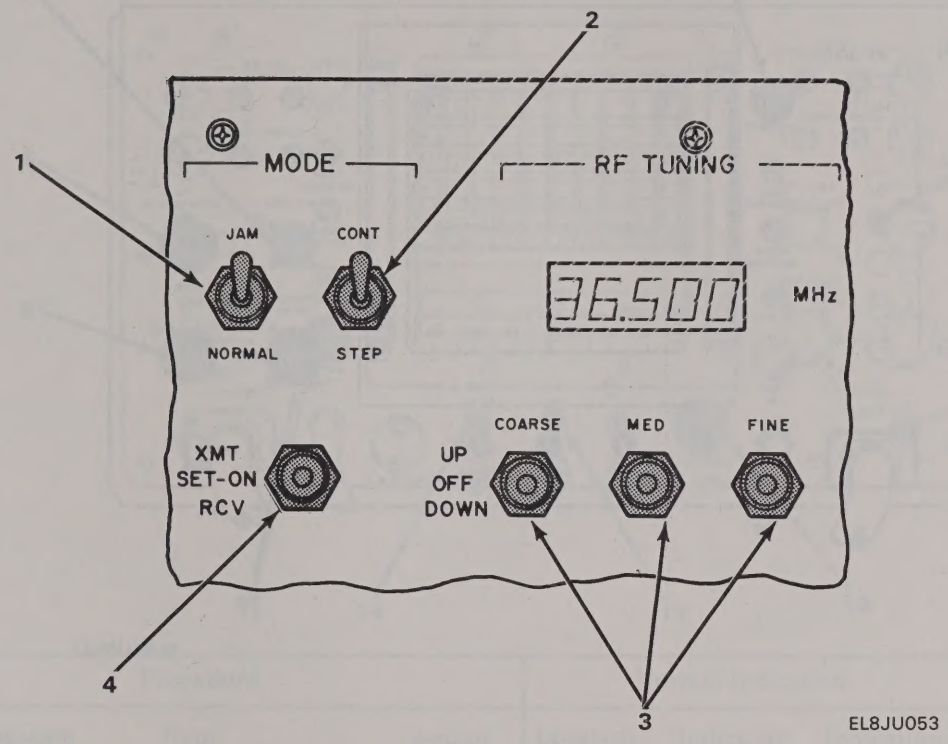
(4) Hold RESET/LAMP TEST switch in up position.



EL8JU056

c. Daily checks.

(1) Perform initial adjustments given in paragraph 2-7a.



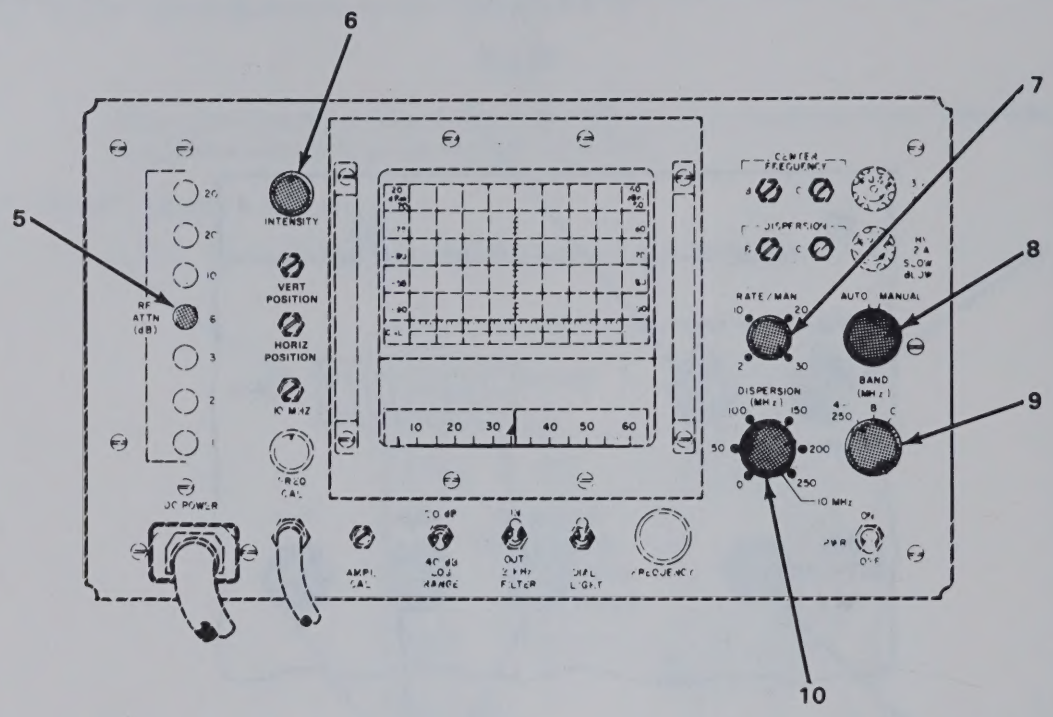
(2) Tune RT unit to 75.00 MHz and set power switch to low.

(3) Check calibration of panoramic display as follows:

	Procedure			Normal Indication			
Step	Location	Item	Action	Location	Indicator	Indication	Remarks
1.	Amplifier-Control	(1) JAM NORMAL switch	JAM		. . .		
2.	Amplifier-Control	(2) CONT STEP switch	CONT		. . .		
3.	Amplifier-Control	(4) XMT SET-ON RCV switch	SET-ON		. . .		
4.	Amplifier-Control	POWER circuit breaker	ON		Blowers	Run	
5.	Amplifier-Control	(3) COARSE, MED, FINE switches	Adjust		RF TUNING	Frequency	Tune to a frequency between 20 and 53 MHz.

2-7. INITIAL ADJUSTMENTS, DAILY CHECKS, AND SELF-TEST. – Continued

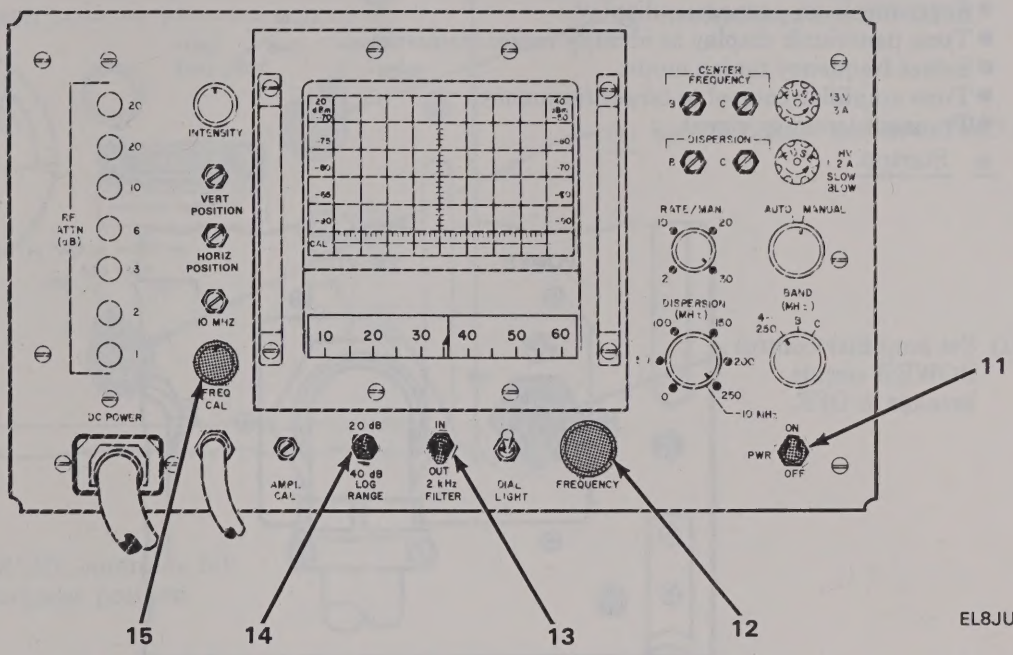
c. Daily checks. – Continued



EL8JU054A

	Procedure			Normal Indication			
Step	Location	Item	Action	Location	Indicator	Indication	Remarks
6.	Panoramic Display	(5) RF ATTN dB switches	Adjust		...		Press 6 dB switch.
7.	Panoramic Display	(6) INTENSITY control	Adjust		...		Adjust for mid range.
8.	Panoramic Display	(7) RATE/MAN control	30		...		
9.	Panoramic Display	(8) AUTO MANUAL switch	AUTO		...		
10.	Panoramic Display	(9) BAND MHz switch	4-250		...		
11.	Panoramic Display	(10) DISPERSION MHz control	50		...		

c. Daily checks. – Continued



EL8JU134

	Procedure			Normal Indication			
Step	Location	Item	Action	Location	Indicator	Indication	Remarks
12.	Panoramic Display	(11) PWR switch	ON		...		
13.	Panoramic Display	(12) FREQUENCY control	Adjust		...		Adjust dial to frequency selected in step 5.
14.	Panoramic Display	(13) 2 kHz FILTER switch	OUT		...		
15.	Panoramic Display	(14) LOG RANGE switch	20 dB		...		
16.	Panoramic Display	(15) FREQ CAL control	Adjust	Panoramic Display	Crt	Varying amplitude sample of transmit signal.	Adjust to position signal to center line of crt.

NOTE

Do not move FREQ CAL control after calibration is completed.

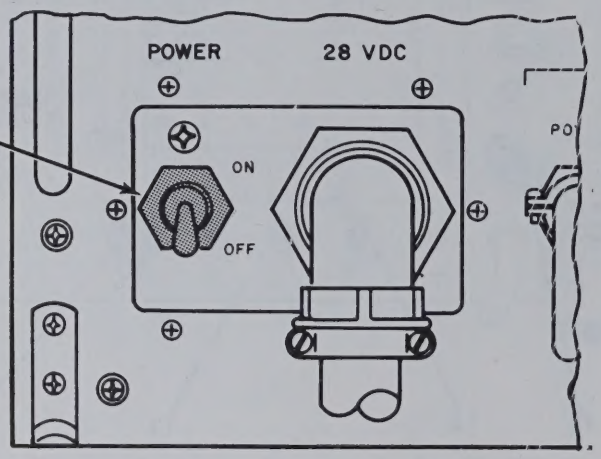
2-8. OPERATING PROCEDURES.

Here is a summary of what you need to do in operating the amplifier group:

- Turn off all electronic equipment.
- Start vehicle engine.
- Set amplifier-control to jamming mode.
- Set controls on panoramic display.
- Tune panoramic display to identify target frequency.
- Select frequency tuning mode.
- Tune amplifier-control to target frequency.
- Transmit jamming signal.

a. Startup.

(1) Set amplifier-control POWER circuit breaker to OFF.



EL8JU059

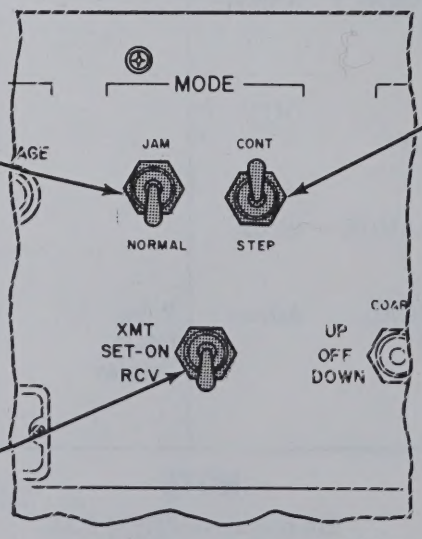
(2) Start vehicle engine.

(3) Set remaining controls of amplifier-control as follows:

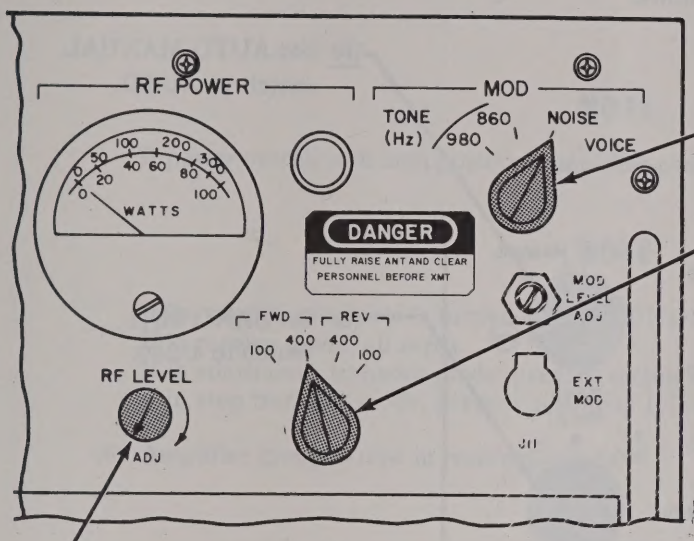
(a) Set JAM NORMAL switch to NORMAL.

(b) Set CONT STEP switch to CONT.

(c) Set XMT SET-ON RCV switch to RCV.



EL8JU060

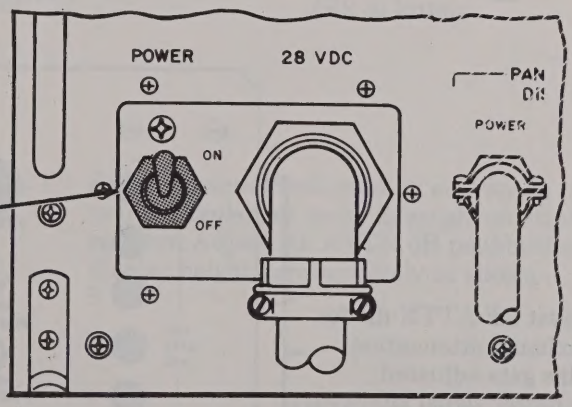


EL8JU061

(d) Set MOD switch to NOISE.

(e) Set FWD REV switch to FWD 400.

(f) Set RF LEVEL control to full counterclockwise position.



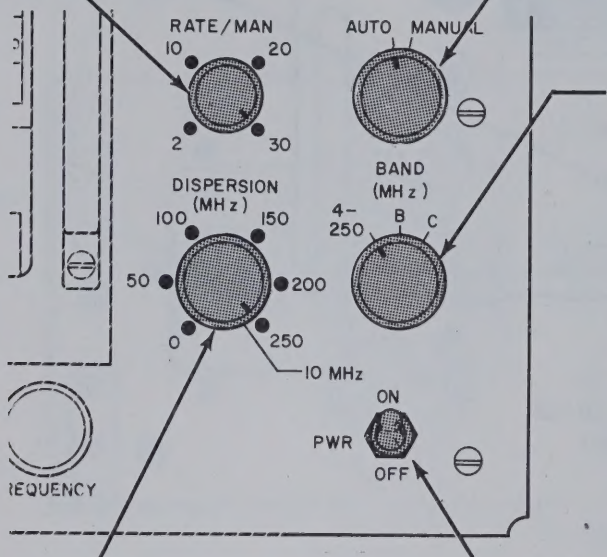
EL8JU062

(g) Set POWER circuit breaker to ON.

2-8. OPERATING PROCEDURES. – Continued

a. Startup. – Continued

(4) Set panoramic display controls as follows:



(a) Set RATE/MAN control to 30.

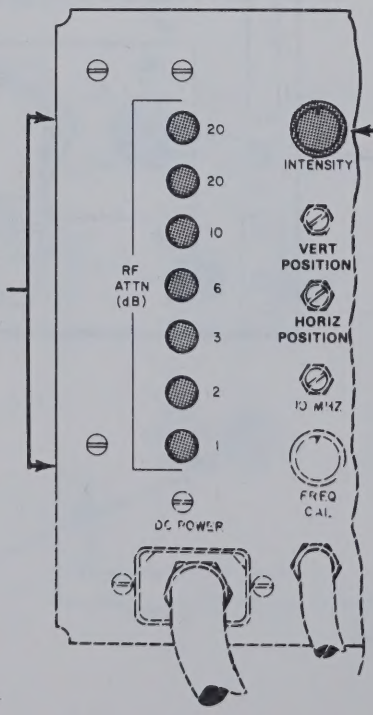
(b) Set AUTO MANUAL switch to AUTO.

(c) Set BAND MHz switch to 4-250.

(d) Set DISPERSION MHz control to 250.

(e) Set PWR switch to ON.

EL8JU057



(f) Adjust RF ATTN dB for maximum attenuation. (This gets adjusted for better signal later on.)

(g) Set INTENSITY control to mid range.

EL8JU058A

(5) Set RT unit power switch to low.

NOTE

If power switch is in high position, amplifier-control will go into high rf input fault.

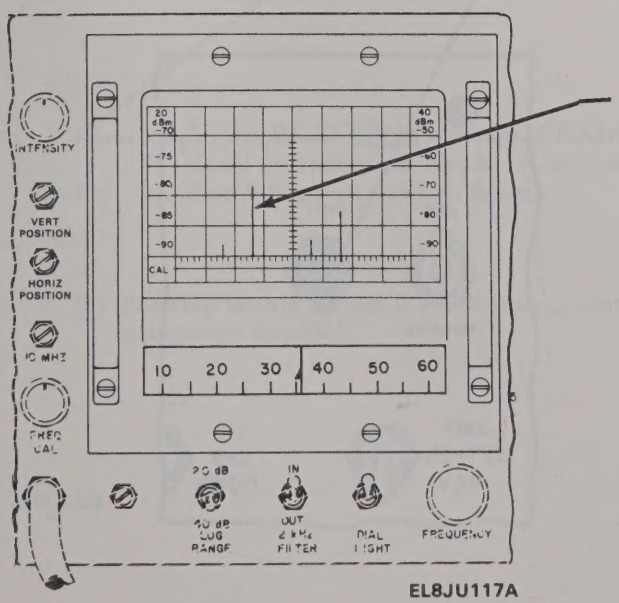
NOTE

After amplifier-control is turned on, RF TUNING will indicate one of these:
If in receive mode, all zeros.
If in continuous transmit mode, present setting of COARSE MED FINE switches.
If in step transmit mode, present setting of RT unit.

(6) Amplifier group is now in receiving mode.

NOTE

In the 20.000 to 53.000 MHz region, it may be easier to search for signal presence by operating in the continuous mode. In the 20.000 to 30.000 MHz region, you must operate in continuous mode to receive and jam.



EL8JU117A

(7) Signal presence indicated by activity on panoramic display, or audio in earphone, handset, or speaker. Adjust RF ATTN dB pushbuttons for display height approximately as shown.

NOTE

Remember that panoramic display may show more than one received signal at a time.

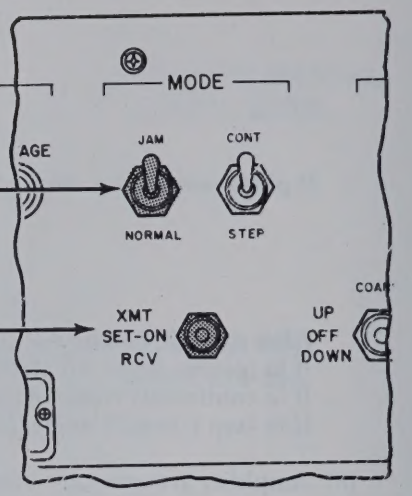
(8) Verify that received signal is signal of interest by checking your assignment and/or by listening.

2-8. OPERATING PROCEDURES. – Continued

b. Jamming Operation.

(1) Set JAM NORMAL switch to JAM.

(2) Set XMT SET-ON RCV switch to SET-ON.



EL8JU067

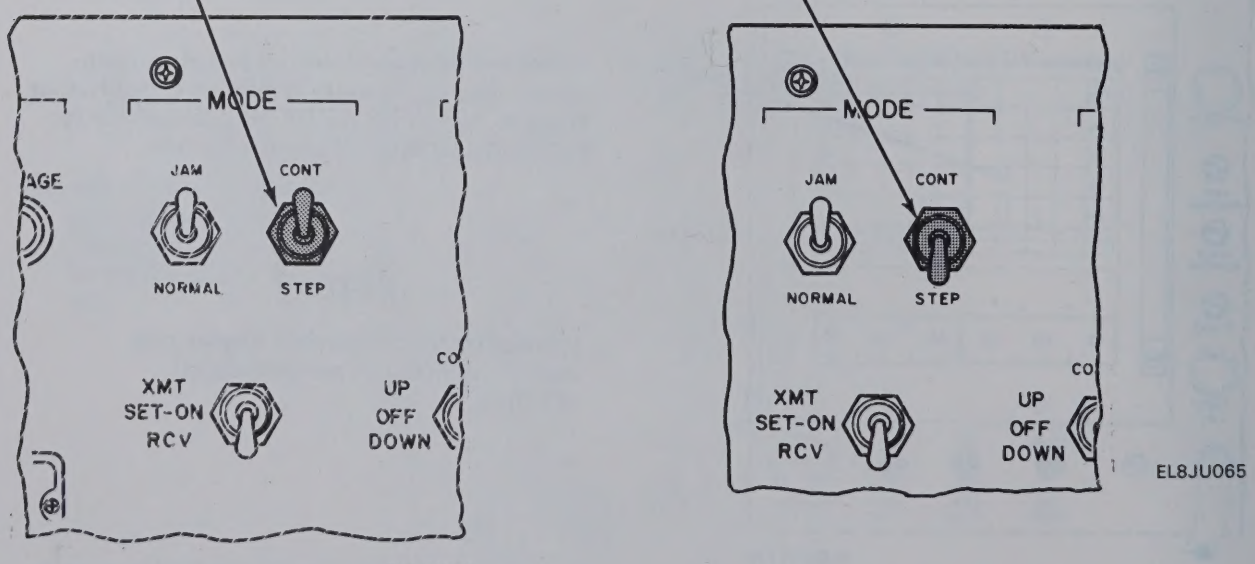
(3) Select continuous or step tuning as follows:

NOTE

Use continuous tuning for 20.000 to 53.000 MHz frequency range; use step tuning for 30.000 to 75.950 MHz frequency range.

(a) For continuous tuning, set CONT STEP switch to CONT.

(b) For step tuning, set CONT STEP switch to STEP.



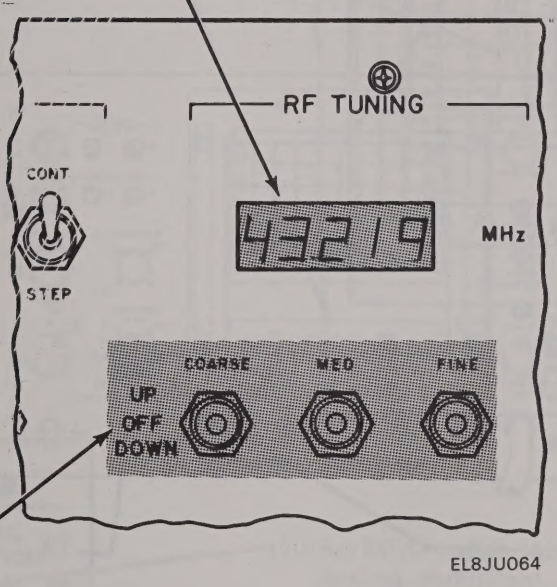
EL8JU063

EL8JU065

(4) For continuous tuning, tune to target signal as follows:

(a) Tune RT unit to 75.00 MHz.

(b) Read frequency (here's a typical indication).



(c) Adjust RF TUNING controls, COARSE, MED, FINE until transmit signal lines up with target signal on panoramic display. (Use combination of hooked index finger to press a switch up and thumb to press a switch down.)

(5) For step tuning, adjust RT unit tuning control until transmit signal lines up with target signal on panoramic display.

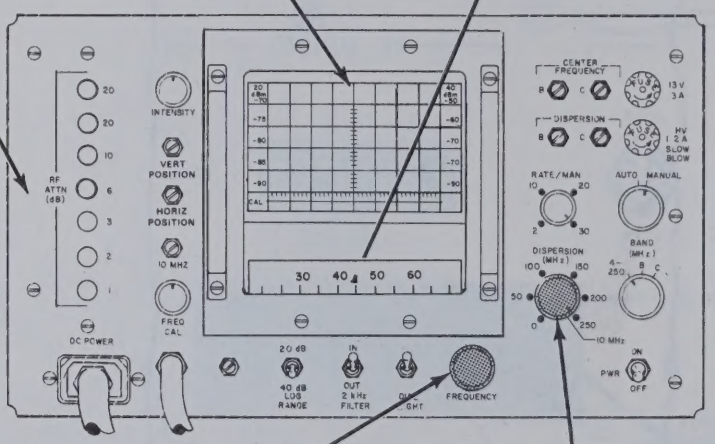
2-8. OPERATING PROCEDURES. – Continued

b. Jamming Operation. – Continued

(6) Set RF ATTN dB for usable display of signal.

Center Line

(7) Read frequency here.



EL8JU066A

(8) Using FREQUENCY control, set target signal to center of crt graticule.

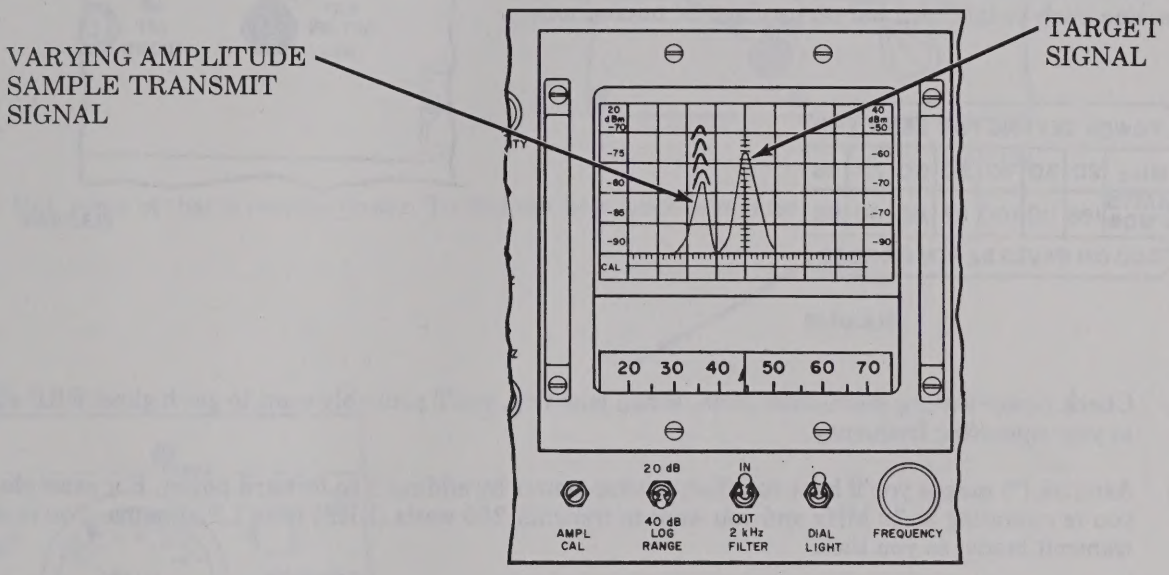
(9) Using DISPERSION MHz control, narrow the sweep.

NOTE

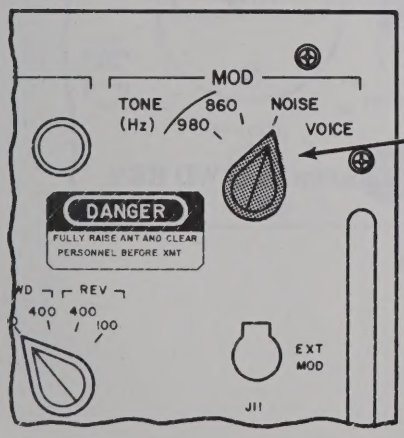
Alternately adjust FREQUENCY and DISPERSION MHz controls for a detailed display of target signal.

NOTE

Any time XMT SET-ON RCV switch is set to SET-ON, a varying amplitude sample of the transmit signal will be displayed along with received signals. Also, remember that panoramic display may show more than one received signal at a time.



EL8JU135



(10) Set MOD switch to desired modulation.

EL8JU068

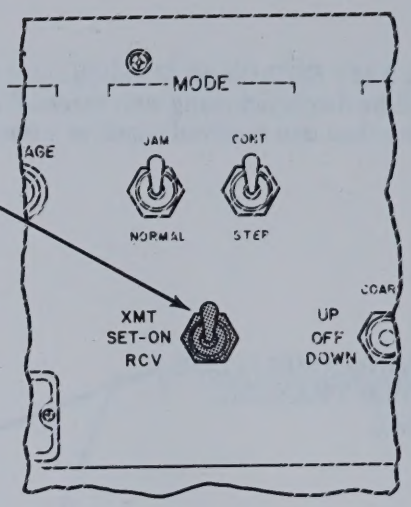
WARNING

Dangerous rf power exists in and around LP antenna during operation. Do not operate amplifier group with personnel within 38 inches of the LP antenna. Do not transmit without having mast fully erect and extended. Do not handle, or come closer than 15 inches to, LP antenna cable while transmitting. Failure to heed this warning may cause injury.

2-8. OPERATING PROCEDURES. – Continued

b. Jamming Operation. – Continued

(11) Set XMT SET-ON RCV switch to XMT.



EL8JU069

NOTE

An alternate method of keying amplifier-control is by pressing push-to-talk (ptt) bar on handset or microphone.

POWER SETTING FOR 250W ERP							
MHz	20	30	40	50	60	70	76
WATTS FWD#	186	110	100	87	85	60	60
*ADD ON REVERSE POWER READ							

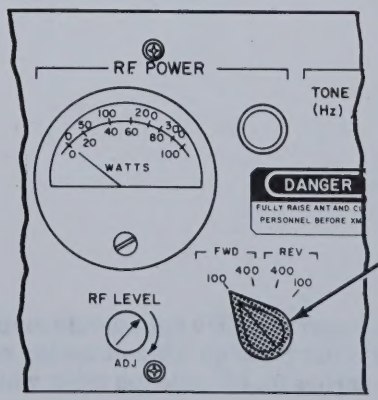
EL8JU120

(12) Check power setting instruction plate. When jamming, you'll probably want to get highest ERP allowable at your operating frequency.

(13) Asterisk (*) means you'll have to offset reverse power by adding it to forward power. For example, let's say you're operating at 70 MHz and you want to transmit 250 watts (ERP) from LP antenna. You're already in transmit mode, so you then:

CAUTION

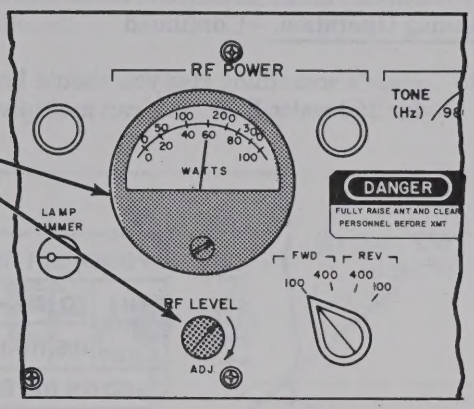
To avoid possible damage to metering circuits, always start with 400 positions of FWD REV switch before switching to 100 positions.



EL8JU121

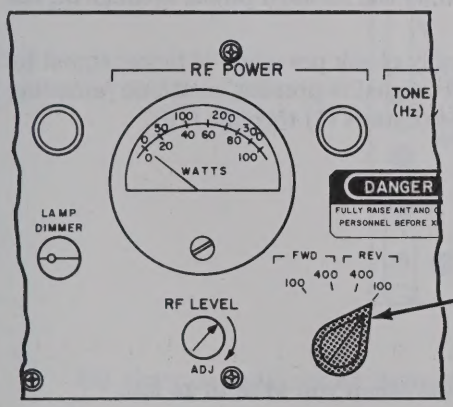
(a) Set FWD REV switch to FWD 100.

(b) Adjust RF LEVEL ADJ control until you read 60 watts on RF POWER meter.



EL8JU122

(14) But, some of that is reverse power. To find out how much is reverse:



EL8JU123

(a) Set FWD REV switch to REV 100.

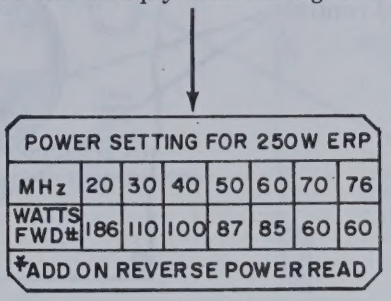
(b) Read reverse power on RF POWER meter.

(15) Let's say you read 12 watts reverse power. You then set FWD REV switch to FWD 100 and adjust RF LEVEL ADJ control to increase meter indication to 72 watts (60 watts + 12 watts). You'll still get some reverse power, but now you're closer to ERP of 250 watts than you were before.

2-8. OPERATING PROCEDURES. – Continued

b. Jamming Operation. – Continued

(16) Here's something else you should know. Although the forward power settings on the plate are for 250 watts ERP, you can multiply them for higher ERPs.



EL8JU124

(17) For example, if you need to radiate 500 watts (250 watts x 2) at, let's say 60 MHz, you'll need to start with 170 watts (85 watts x 2) forward.

(18) Of course, you'll need to increase RF LEVEL ADJ control to offset the higher reverse power you'll read on the meter.

(19) You can also get ERPs lower than 250 watts by dividing the forward power settings on the plate by the proper ratio.

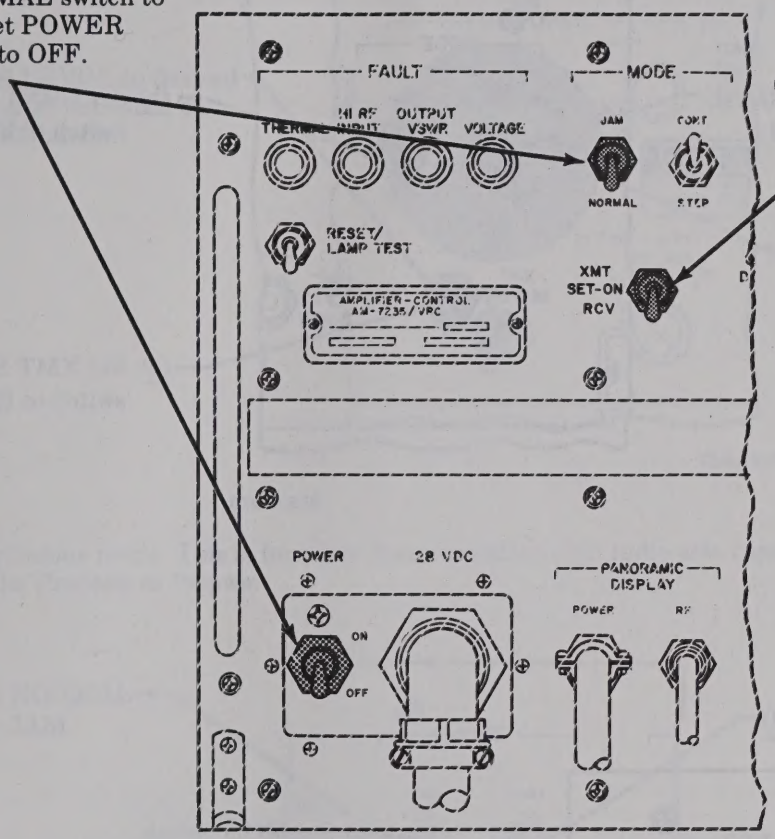
(20) After you have set power level for jamming, periodically check presence of target signal by setting XMT SET-ON RCV switch to SET-ON. If target signal is present, continue jamming; if not, set XMT SET-ON RCV switch to RCV and repeat steps (1) through (19).

NOTE

If ptt bar is used to key amplifier-control, release bar when you want to go into receive mode.

c. Radio Communication. With JAM NORMAL switch set to NORMAL, radio communication bypasses the amplifier-control and communication is through the radio set.

(1) Set JAM NORMAL switch to NORMAL or set POWER circuit breaker to OFF.



(2) Set XMT SET-ON RCV to RCV.

EL8JU125

(3) Operate radio set as instructed in TM 11-5820-401-10-1.

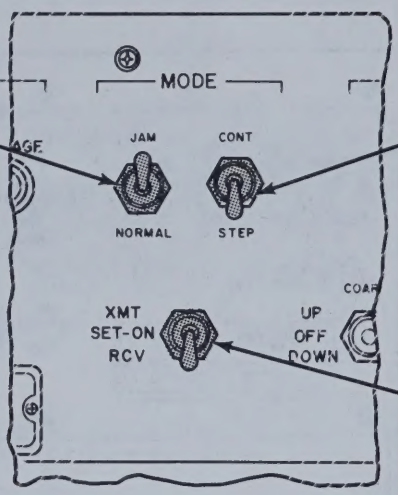
d. Amplifier-Control Communication. Communications using amplifier-control extends the output power and communication range of the radio set. Step mode covers 30.000 to 75.950 MHz in 50 kHz steps. Continuous mode covers 20.000 to 53.000 MHz in 1 kHz steps.

(1) Step mode. This is for voice communication with radio sets having detent or channelized tuning. Proceed as follows:

2-8. OPERATING PROCEDURES. – Continued

d. Amplifier-Control Communication. – Continued

(1) Step mode. – Continued

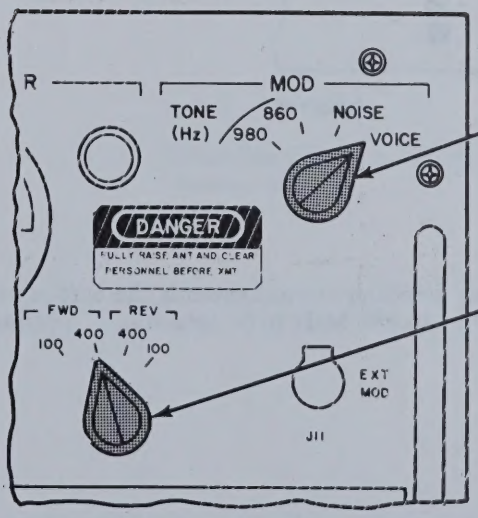


(a) Set JAM NORMAL switch to JAM.

(b) Set CONT STEP switch to STEP.

(c) Set XMT SET-ON RCV switch to RCV.

EL8JU073



(d) Set MOD switch to VOICE.

(e) Set FWD REV switch to FWD 400.

(f) Tune RT unit to desired frequency.

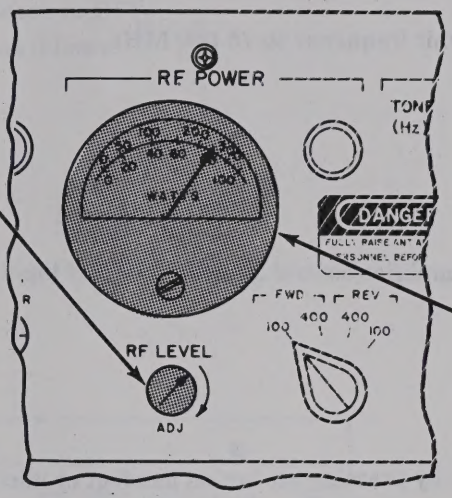
EL8JU074

NOTE

To avoid amplifier-control going into high rf input fault, set RT unit power switch to low.

(g) Transmit by pressing ptt bar on handset.

(h) Adjust RF LEVEL to desired power level as indicated on RF POWER meter.



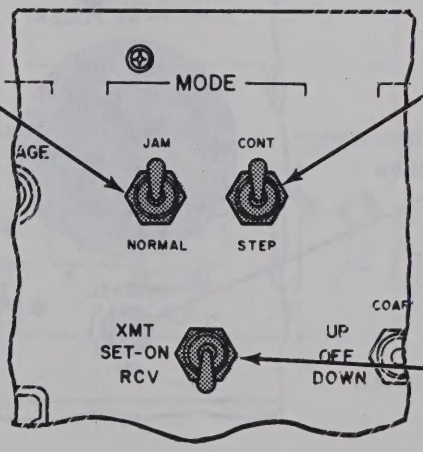
(i) Read RF POWER.

EL8JU075

(2) Continuous mode. This is for voice communication with radio sets capable of continuous tuning down to 20.000 MHz. Proceed as follows:

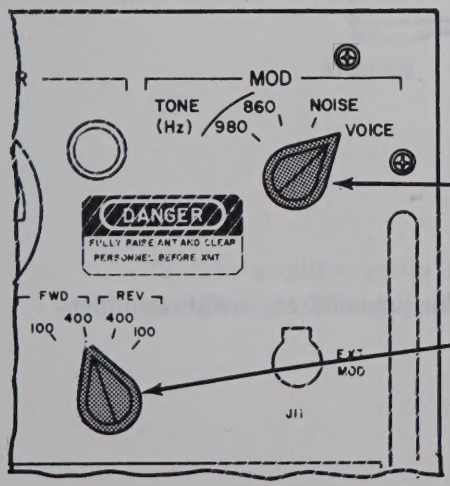
(a) Set JAM NORMAL switch to JAM.

(b) Set CONT STEP switch to CONT.



(c) Set XMT SET-ON RCV switch to RCV.

EL8JU076



(d) Set MOD switch to VOICE.

(e) Set FWD REV switch to FWD 400.

EL8JU077

2-8. OPERATING PROCEDURES. – Continued

d. Amplifier-Control Communication. – Continued

(2) Continuous mode. – Continued

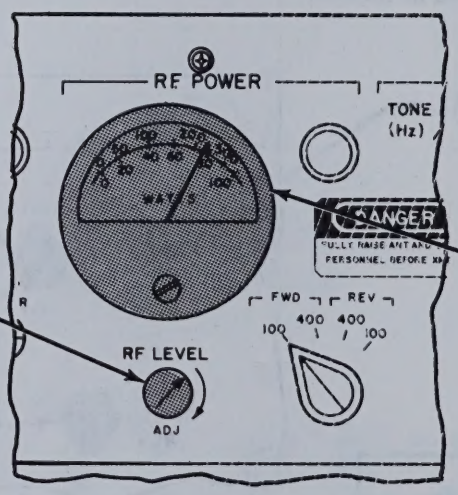
(f) Set RT unit frequency to 75.000 MHz.

NOTE

To avoid amplifier-control going into high rf input fault, set RT unit power switch to low.

(g) Transmit by pressing ptt bar on handset or microphone.

(h) Adjust RF LEVEL to desired power level as indicated on RF POWER meter.



(i) Read RF POWER.

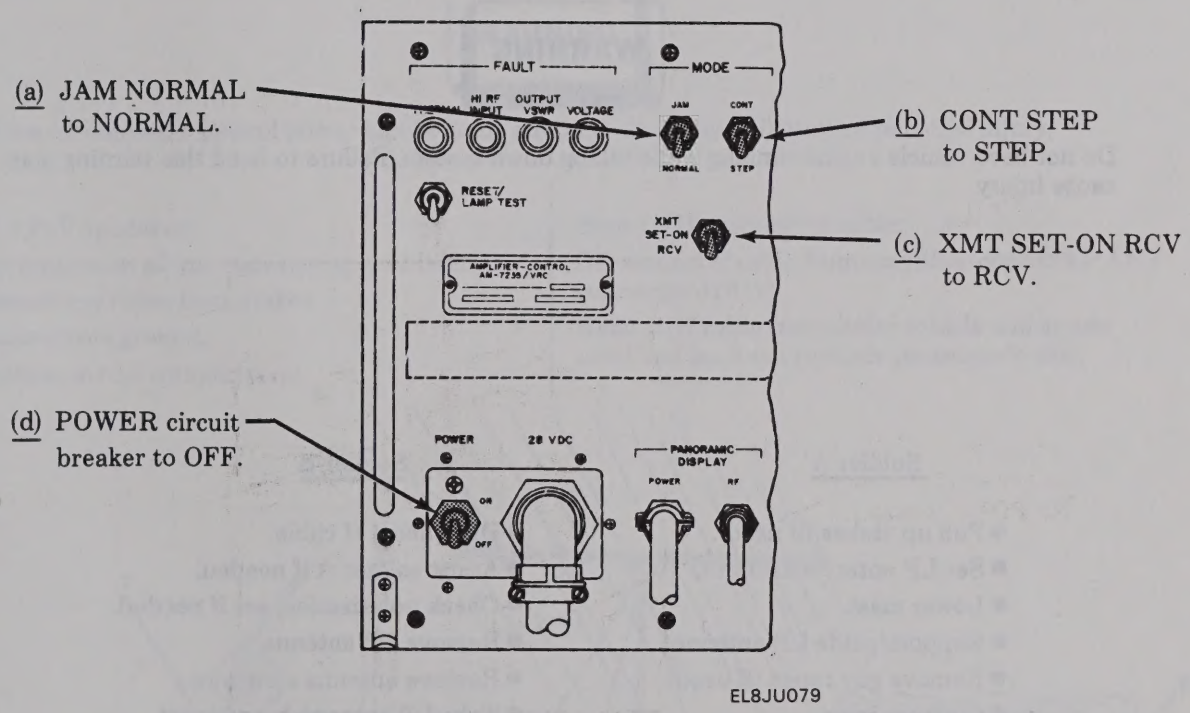
e. Standby. The control settings for standby are the same as for radio communication with amplifier-control POWER circuit breaker set to ON.

f. Remote Operation. The front panel of the amplifier-control has a REMOTE OPERATION connector for use with a remote control unit (not supplied).

g. Shutdown.

(1) Set panoramic display PWR switch to OFF.

(2) Set amplifier-control switches as follows:



EL8JU079

(3) The amplifier group is shut down but the radio set is fully operational.

(4) Turn off RT unit power before preparing for movement.

2-9. OPERATION OF AUXILIARY EQUIPMENT.

a. Radio Set. Operation of the radio set is given in TM 11-5820-401-10-1.

b. KY Units. Operation of TSEC/KY-38 is given in TM 11-5810-245-10; operation of TSEC/KY-57 is given in TM 11-5810-256-12.

2-10. PREPARATION FOR MOVEMENT.

These procedures allow two soldiers, identified A and B, to quickly take down the mast and LP antenna in preparation for movement of the vehicle. Here's a summary of each soldier's responsibilities:

WARNING

Do not have vehicle engine running while taking down system. Failure to heed this warning may cause injury.

Soldier A

- Pull up stakes (if used).
- Set LP antenna azimuth.
- Lower mast.
- Support/guide LP antenna.
- Remove guy ropes (if used).
- Collapse mast.
- Remove mast.
- Take down support struts.
- Remove mast mount.
- Remove bumper attachment.
- Store and tie down items.

Soldier B

- Disconnect rf cable.
- Assist soldier A if needed.
- Check polarization, set if needed.
- Remove LP antenna.
- Remove antenna elements.
- Take LP antenna boom apart.
- Store and tie down items.

a. Lowering Mast.

Soldier A	Soldier B

WARNING

Be careful not to allow bare flesh to touch metal during extreme cold. Flesh could stick and freeze to metal.

WARNING

Never disconnect LP antenna while amplifier-control is in transmit mode. Failure to heed this warning may cause personal injury.

WARNING

Turn off amplifier-control power before doing anything else. This will prevent personal injury.

Step 1 – Pull up stakes:

Loosen tension on all guy ropes using snubbers (1).

Disconnect guy ropes from stakes.

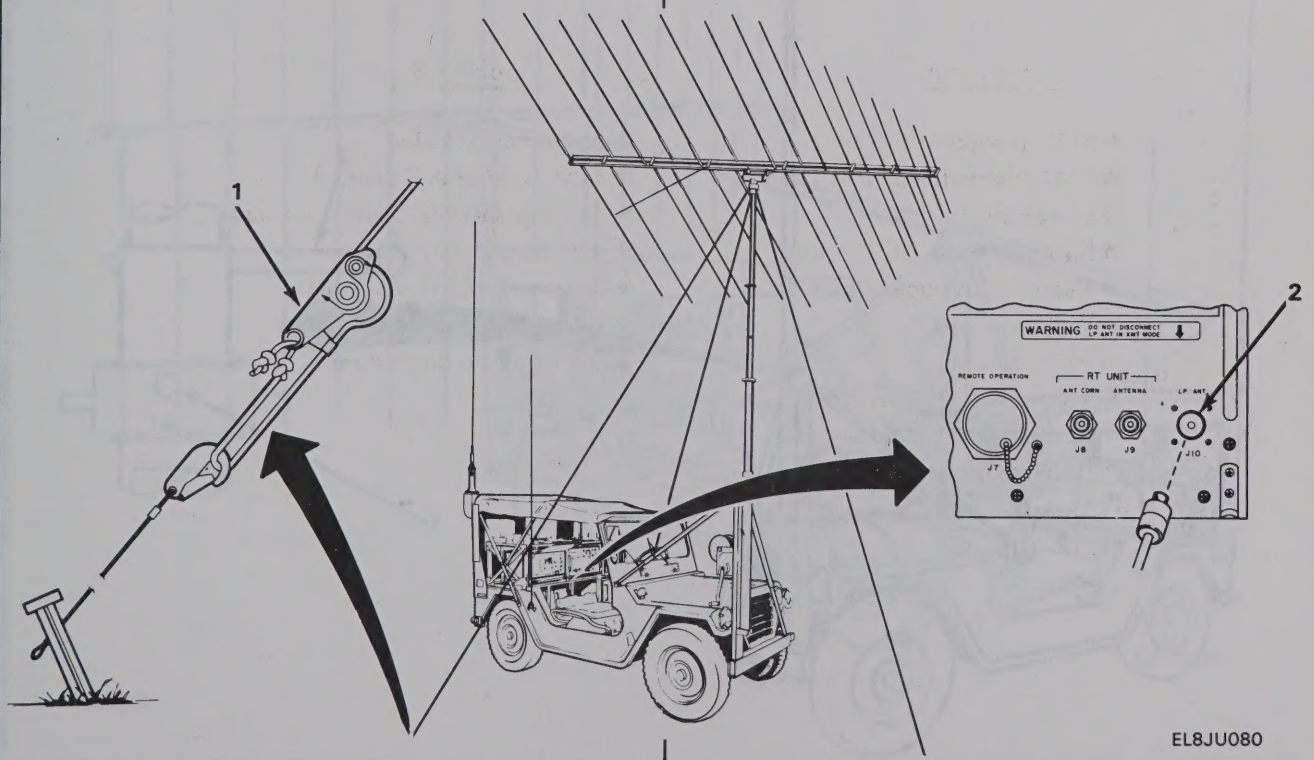
Pull stakes from ground.

Stow stakes in tool compartment.

Step 1 – Disconnect rf cable:

Disconnect rf cable from amplifier-control LP ANT connector J10 (2).

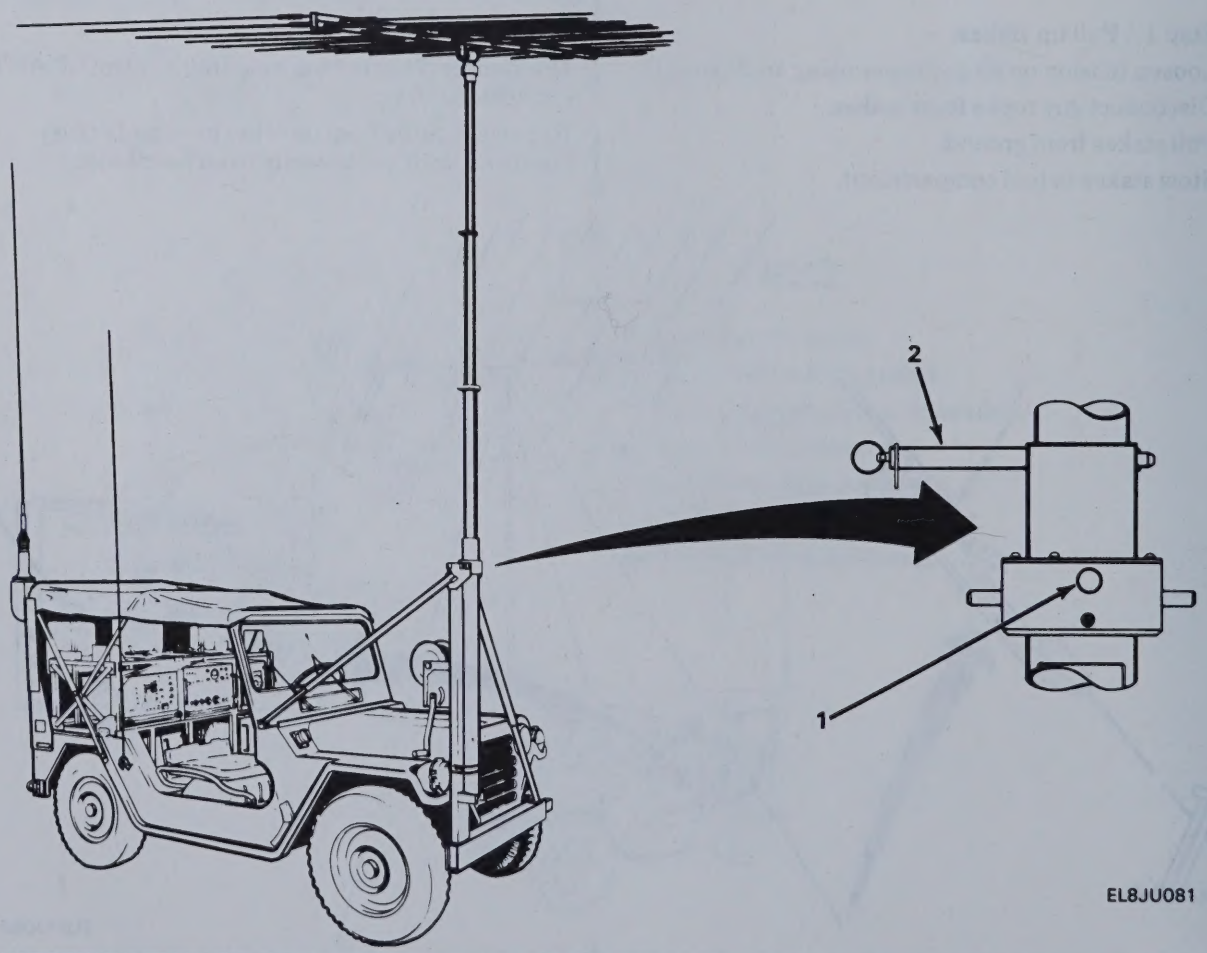
Remove rf cable from under vehicle and across hood and lay it out towards passenger's side.



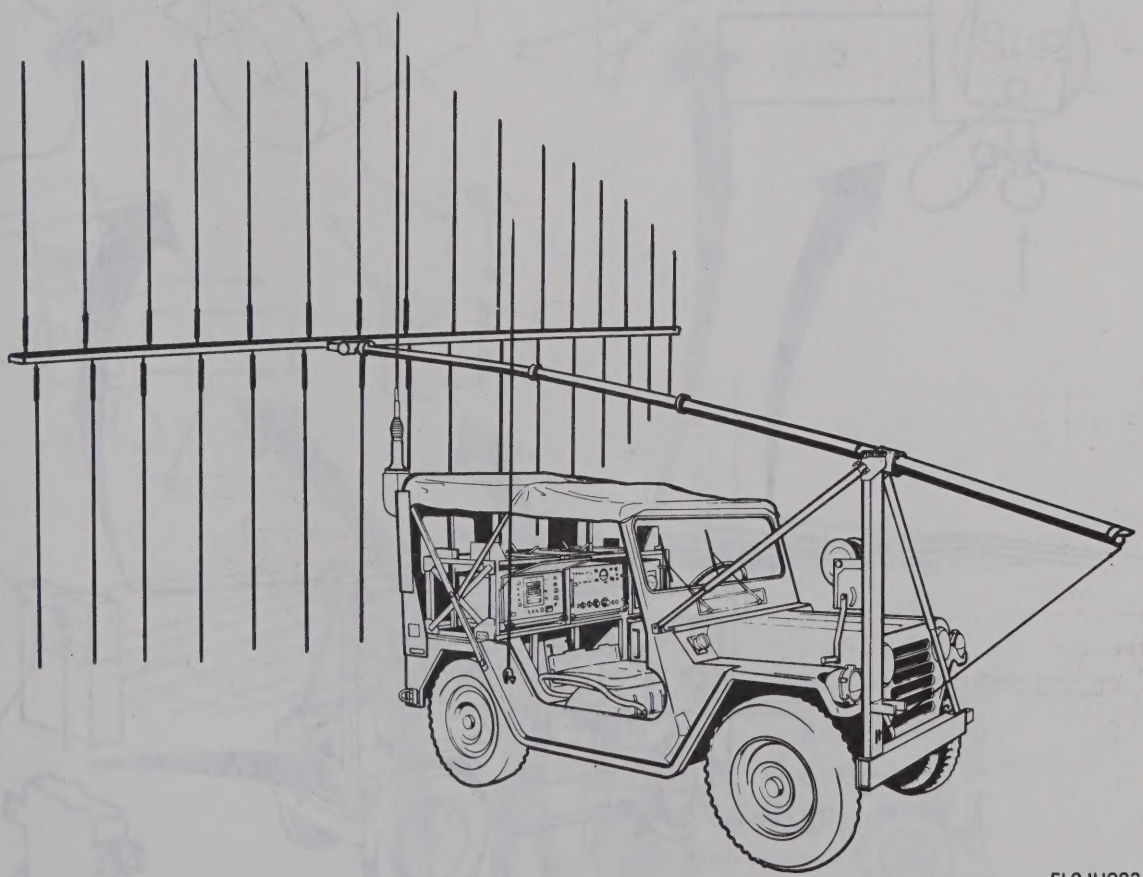
2-10. PREPARATION FOR MOVEMENT. – Continued

a. Lowering Mast. – Continued

Soldier A	Soldier B
Step 2 – Set LP antenna azimuth: Pull retractable pin (1). **CAUTION** To avoid possible breakage of azimuth handle (2), never use any kind of extension device to gain leverage. Turn azimuth handle (2) until it points to the passenger's side and retractable pin locks in position. If antenna was set for vertical or 45° polarization, be sure lower elements are forward of mast. This will avoid interference with vehicle roof upon lowering.	Step 2 – Assist soldier A if needed.



Soldier A	Soldier B
Step 3 – Lower mast: Loosen and separate buckle and strap at base of mast. Turn winch handle counterclockwise to lower mast toward horizontal position. **WARNING** Pull base of mast away from mast support and keep cable tight. Otherwise, you could be injured if base of mast springs back.	Step 3 – Check polarization: If LP antenna was set for horizontal polarization, tell soldier A to stop lowering mast as elements near the ground. Flex radio antenna forward. Observe antenna element-to-ground clearance as mast is lowered. **CAUTION** While mast is horizontal, do not do anything, such as removing elements or applying force that might cause imbalance at antenna mounting adapter. Otherwise, you might damage mast.

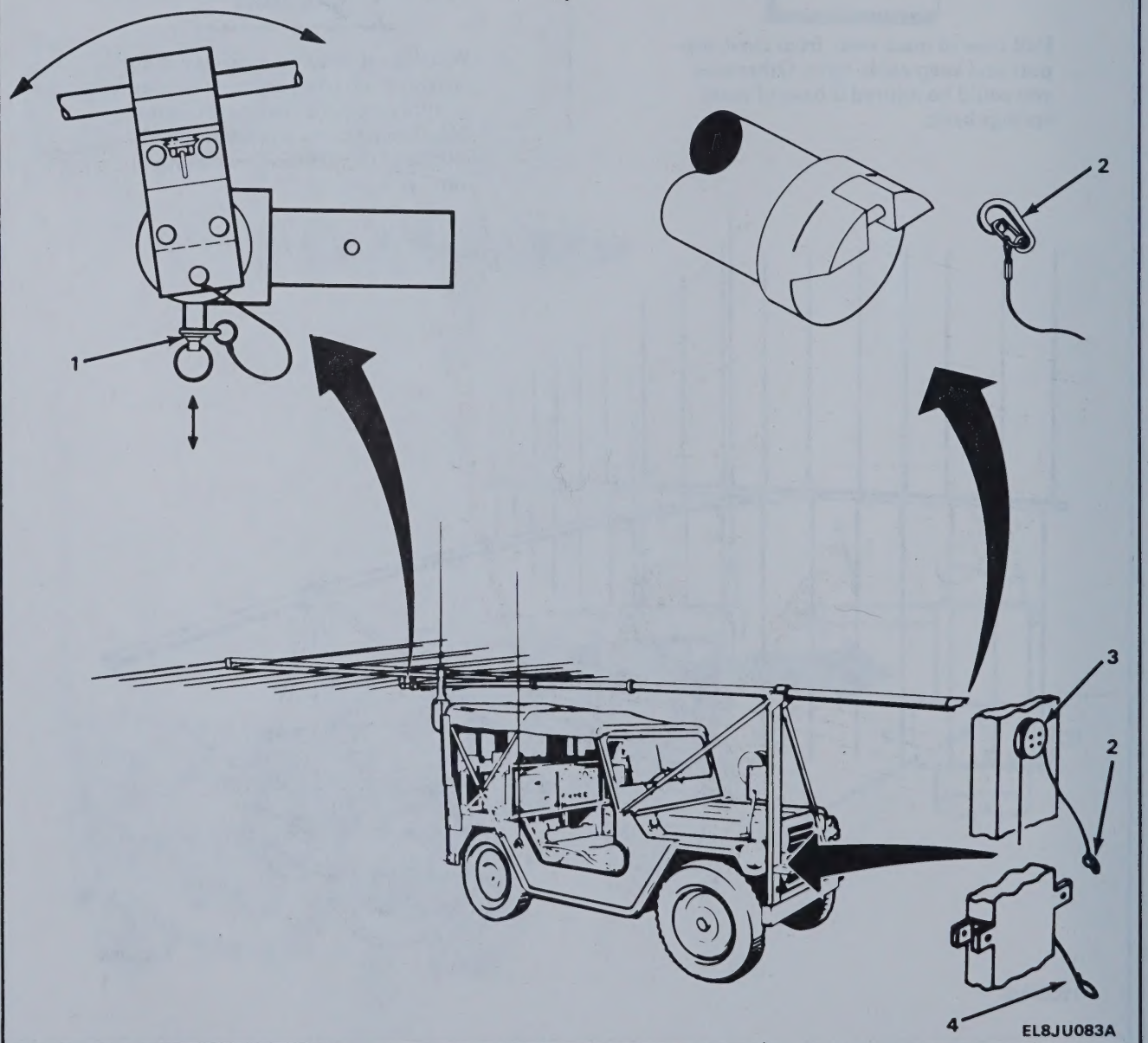


EL8JU082

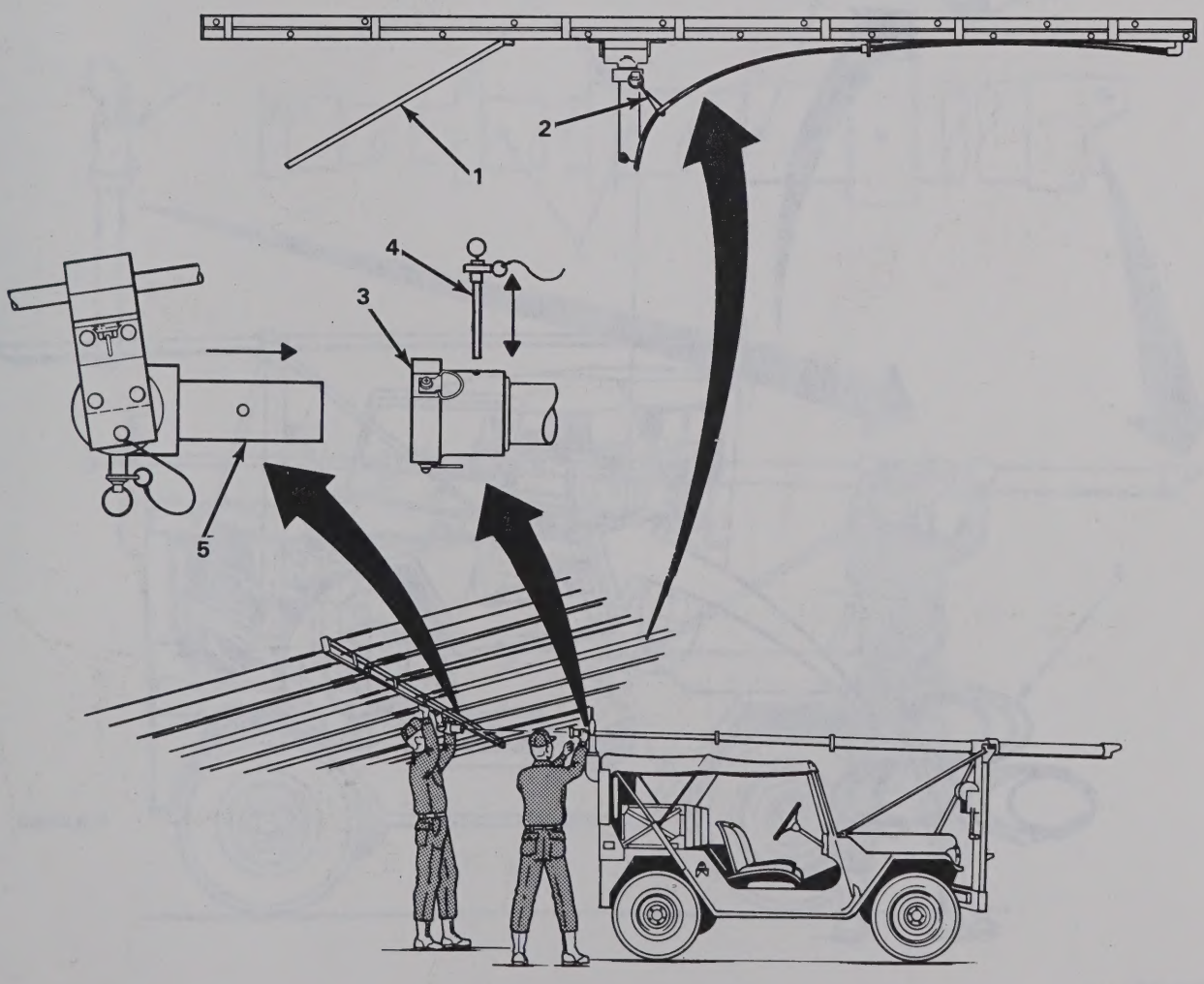
2-10. PREPARATION FOR MOVEMENT. – Continued

a. Lowering Mast. – Continued

Soldier A	Soldier B
Step 4 – Lower mast: If needed, finish lowering mast when instructed by soldier B. Disconnect hook on end of winch cable (2) from pin on end of mast. Route winch cable up front of mast support, over its keeper (3), and connect hook to ring of elastic cord (4). Take up slack in cable using winch.	Step 4 – Set polarization: If necessary, set LP antenna for vertical polarization. Pull polarization pin (1). Turn LP antenna until elements are almost parallel to ground. Replace polarization pin. Instruct soldier A to complete lowering of mast if needed.



Soldier A	Soldier B
Step 5 – Support/guide LP antenna: Support and guide LP antenna as needed. Remove antenna mount adapter (5) from mast socket.	Step 5 – Remove LP antenna: Fold stinger element (1). Unhook cable support (2) from top of mast (3) but keep cable connected to boom section. Remove antenna locking pin (4) from top of telescoping mast. Insert locking pin.



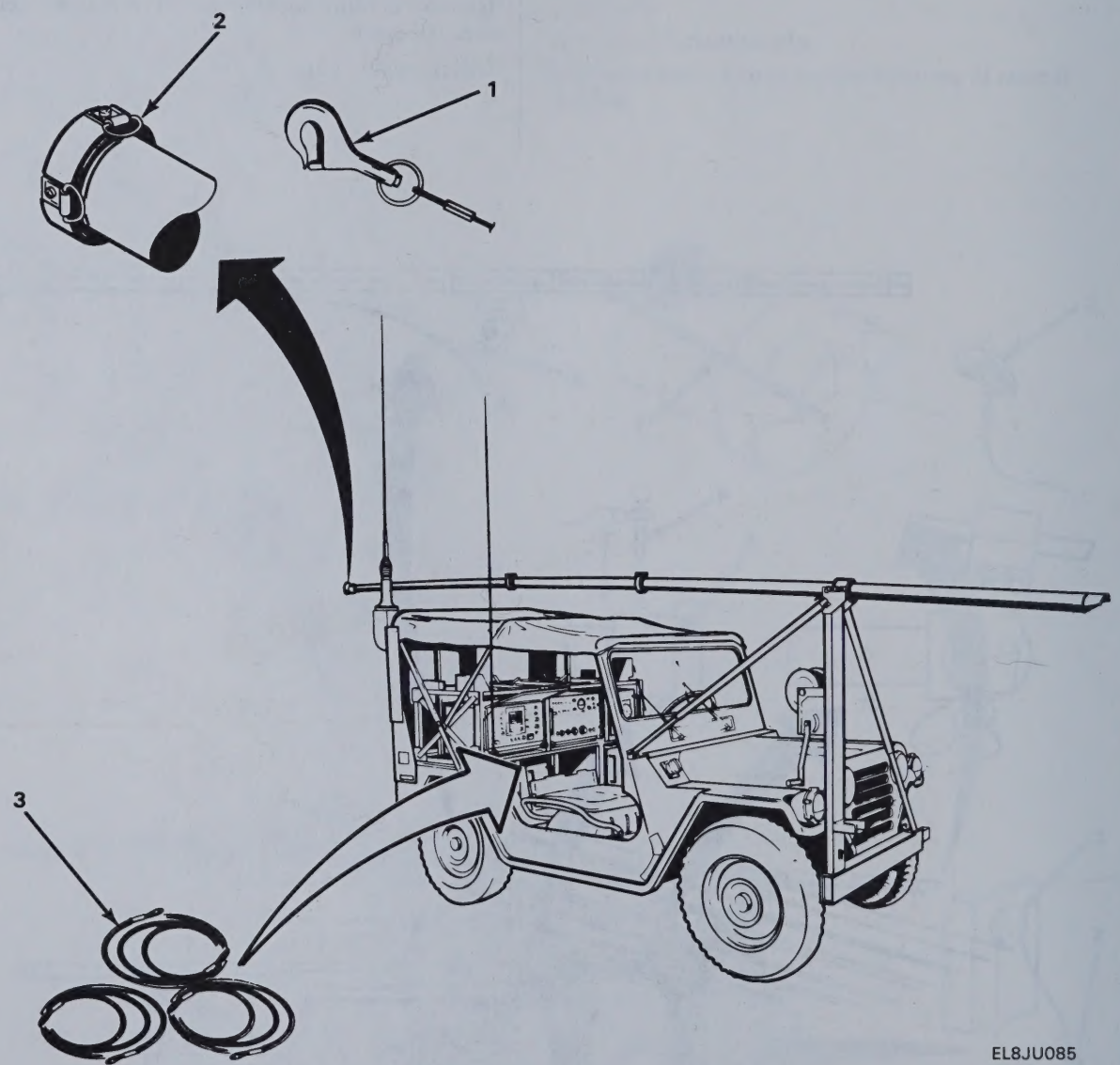
EL8JU084

2-10. PREPARATION FOR MOVEMENT. – Continued

b. Taking Down Mast.

Soldier A

Step 1 – Remove guy ropes (if used):
Unhook guy rope clips (1) from rings (2) on mast.
Coil guy ropes (3) and place in tool compartment.



Soldier A

Step 2 – Collapse mast:

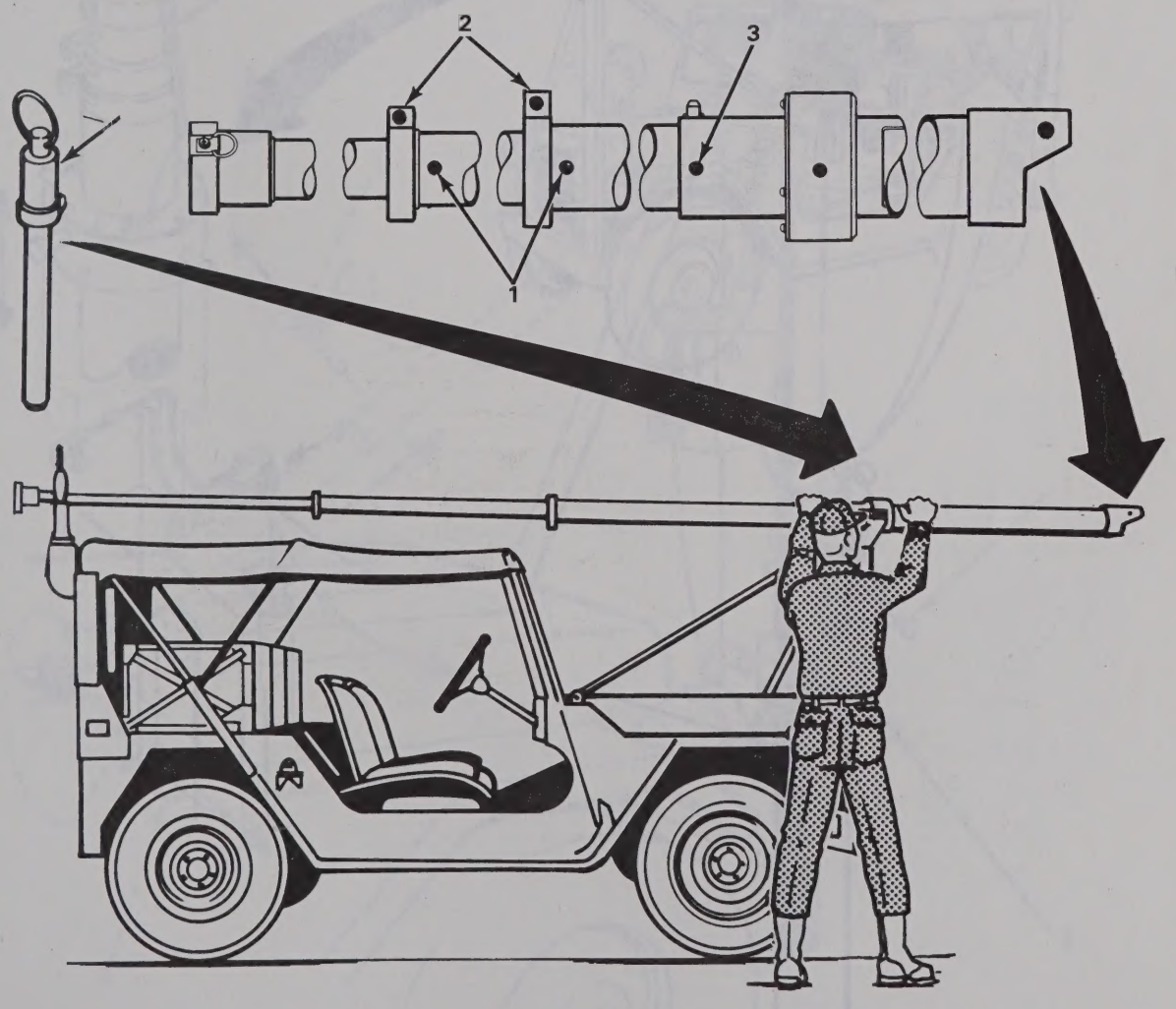
Remove locking pins (1) and place in storage locations (2).

Remove azimuth handle (3) and place in storage location.

WARNING

Do not rapidly telescope mast sections as mast will rapidly pivot to vertical position and possibly cause injury.

While supporting lower mast section horizontally, slowly telescope upper mast sections into bottom section. Allow mast to pivot to vertical position.

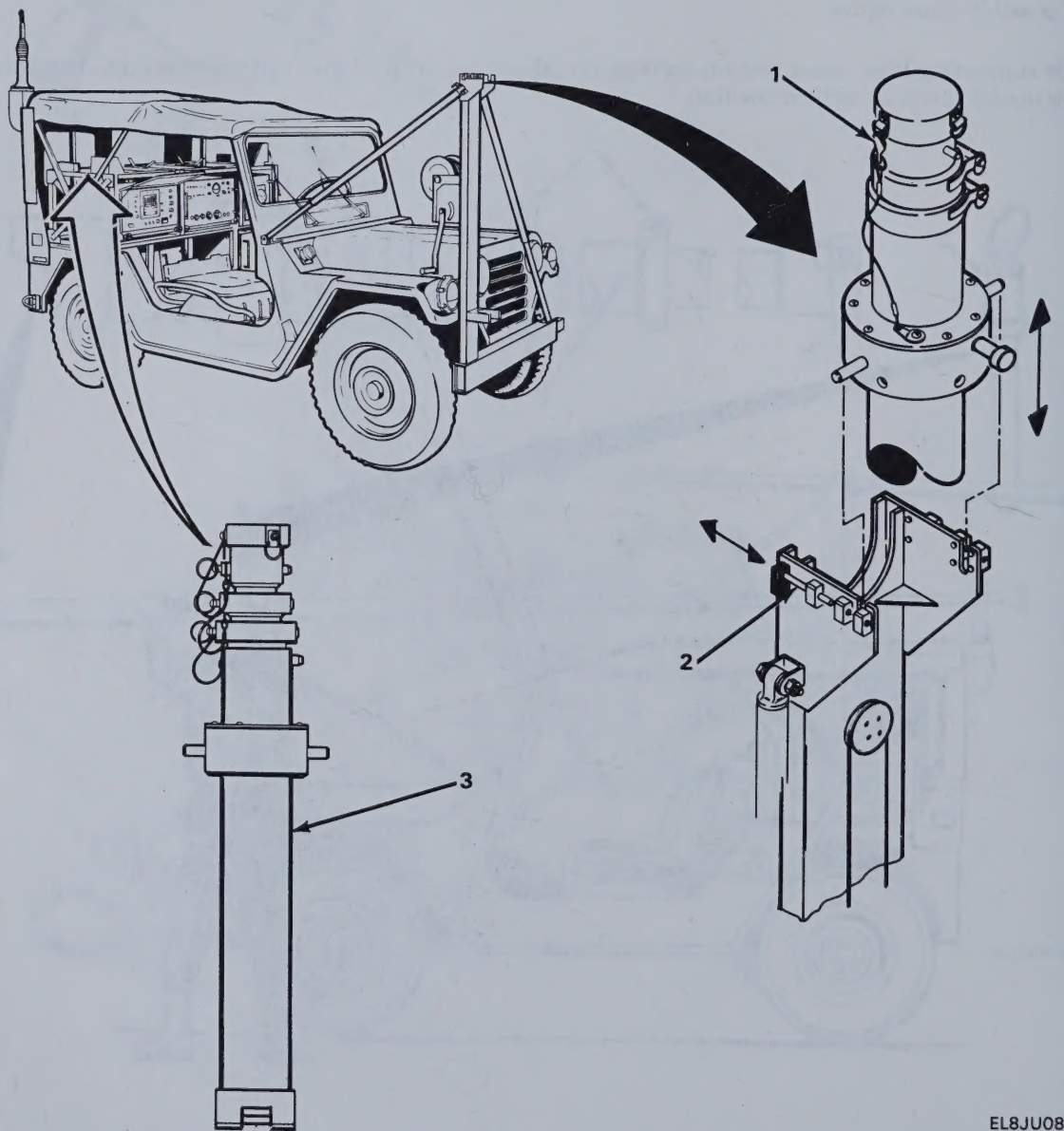


EL8JU086

2-10. PREPARATION FOR MOVEMENT. – Continued

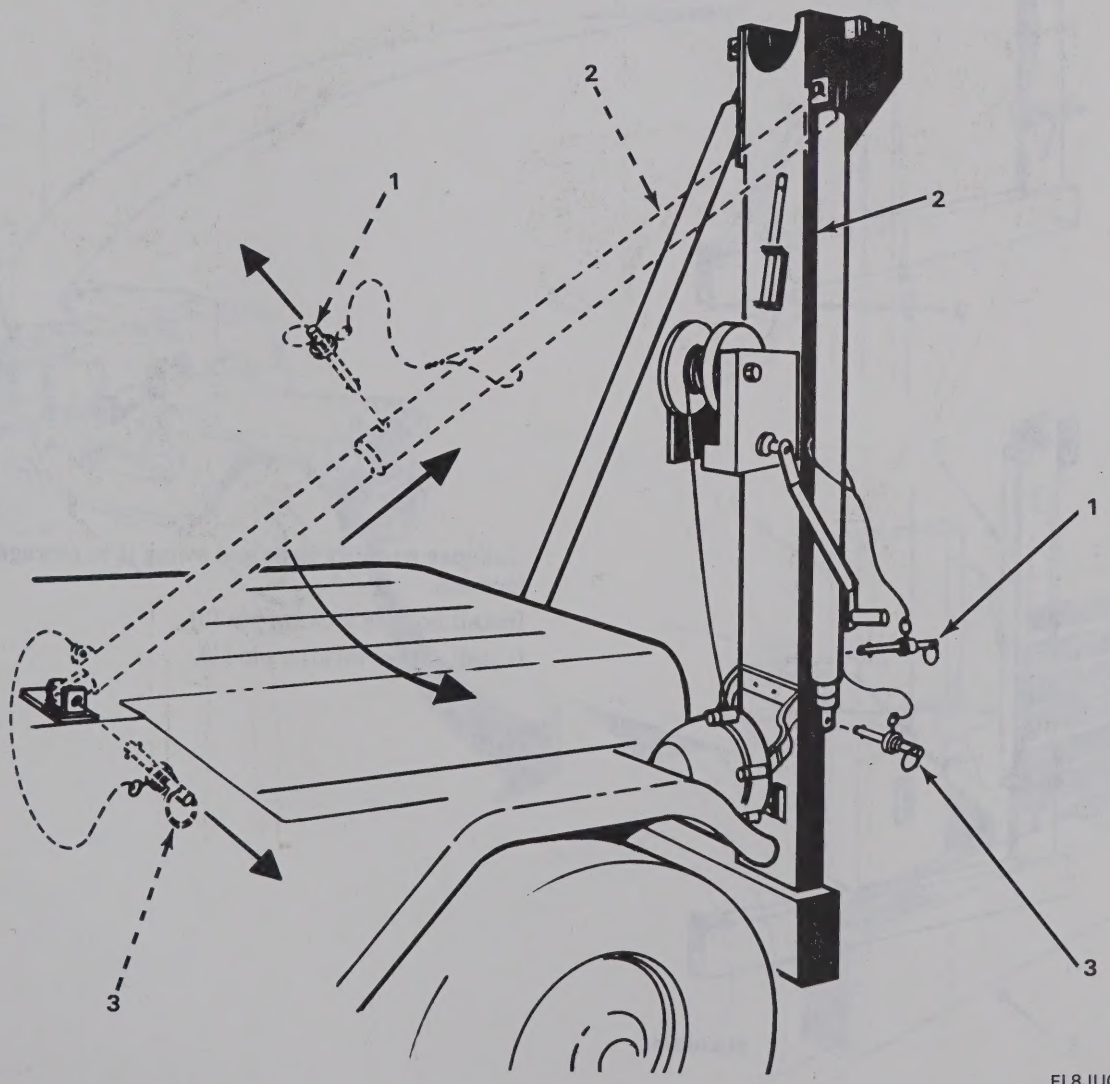
b. Taking Down Mast. – Continued

Soldier A
Step 3 – Remove mast: Hook lanyard (1) to guy ring at top of mast. Push both mast locking pins (2) on mast mount to rear. Lift mast vertically from mast mount. Place mast in storage location (3). Push both mast locking pins forward.



Soldier A

Step 4 – Take down side support strut:
Remove center locking pin (1) from side support strut (2).
Hold support strut by bottom section and remove bottom locking pin (3).
Collapse support strut and swing it to storage location.
Install bottom locking pin (3).
Install center locking pin (1).

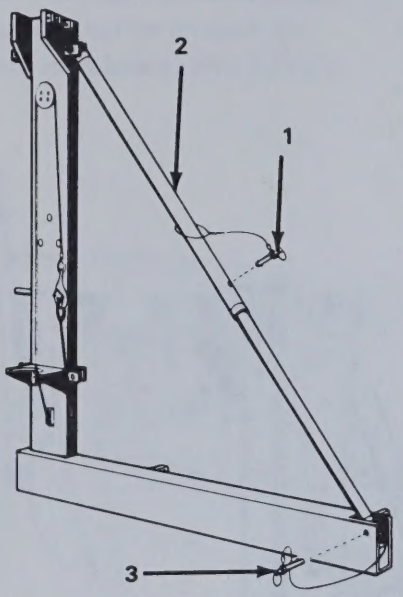


2-10. PREPARATION FOR MOVEMENT. – Continued

b. Taking Down Mast. – Continued

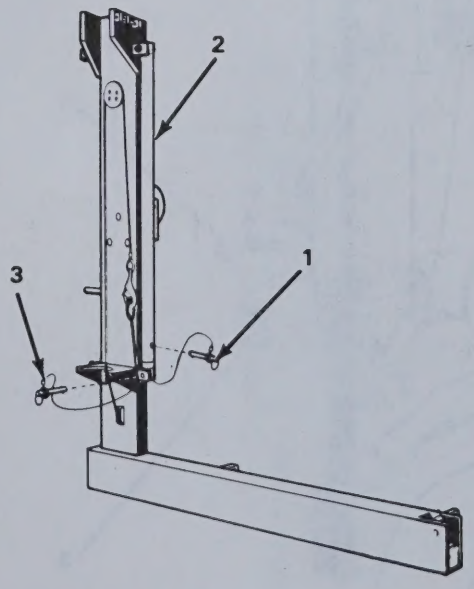
Soldier A

Step 5 – Take down front support strut:



Remove center locking pin (1) from support strut (2).

Hold support strut by bottom and remove bottom locking pin (3).



Collapse support strut and swing it to storage location.

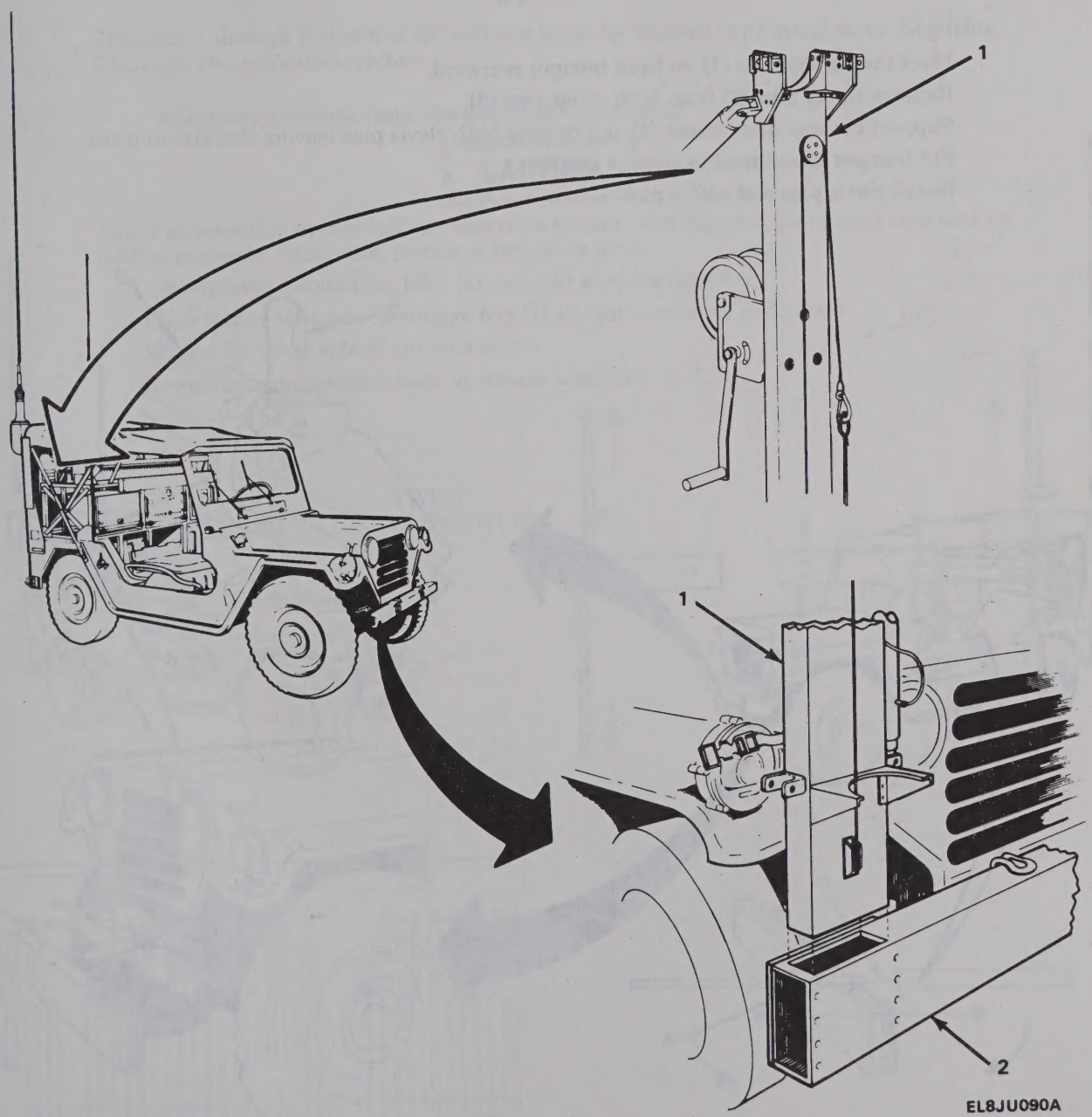
Install bottom locking pin (3).

Install center locking pin (1).

EL8JU089A

Soldier A

Step 6 – Remove mast mount:
Remove mast mount (1) from bumper attachment (2).
Buckle strap loosely around mast mount.
Put mast mount in storage location.



2-10. PREPARATION FOR MOVEMENT. – Continued

b. Taking Down Mast. – Continued

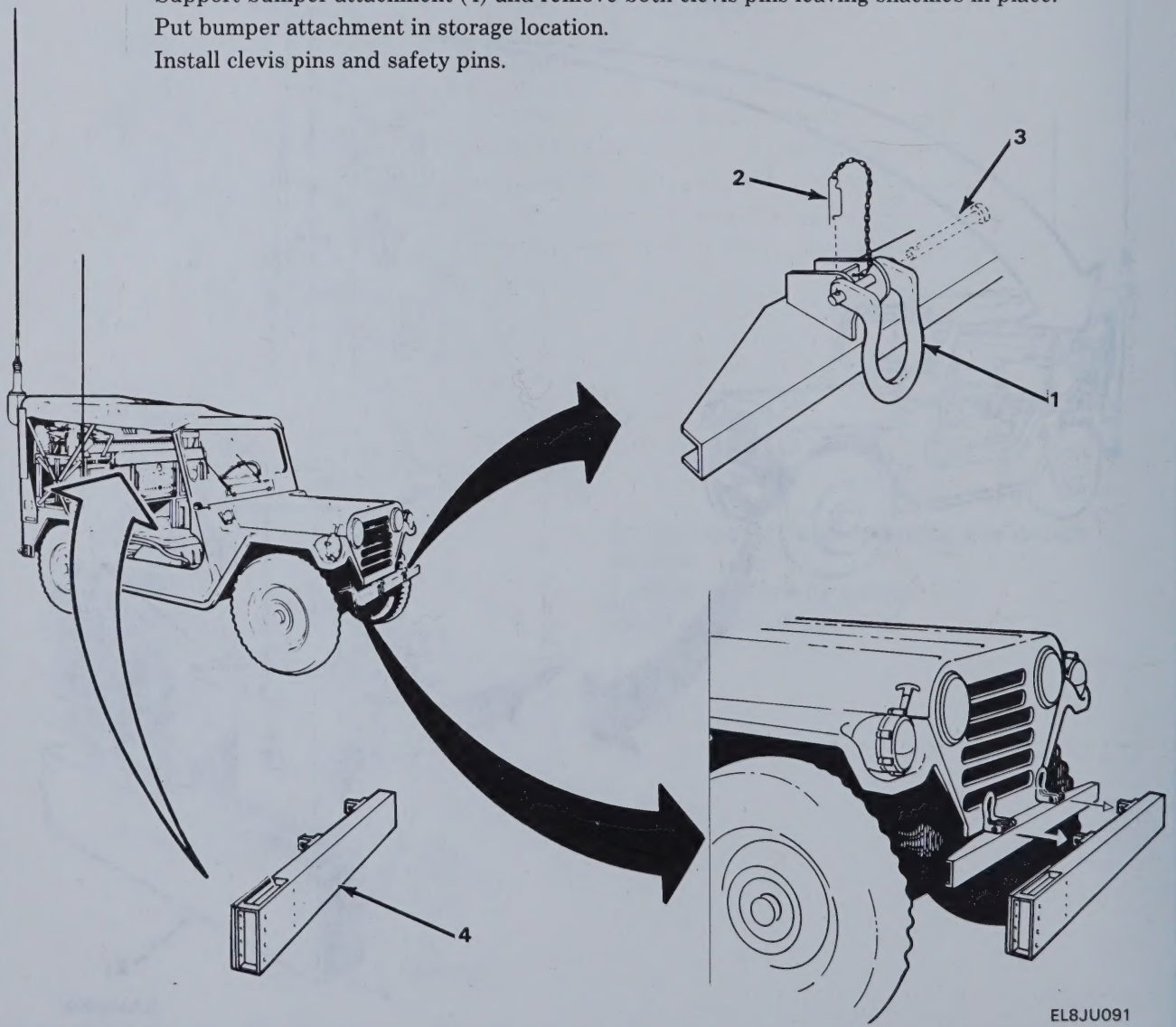
Soldier A

Step 7 – Remove bumper attachment:

NOTE

For short moves, bumper attachment may be left on vehicle.

Pivot towing shackles (1) on front bumper rearward.
Remove safety pins (2) from both clevis pins (3).
Support bumper attachment (4) and remove both clevis pins leaving shackles in place.
Put bumper attachment in storage location.
Install clevis pins and safety pins.



c. Taking LP Antenna Apart.

Soldier B

Step 1 – Remove antenna elements:

Remove two antenna element bags (1) from storage locations. Open bags.

Coil LP antenna cable and place it under elements.

Starting with antenna element for one end and working toward the other end:

NOTE

Elements 1 through 8 attach to LP antenna boom by bayonet-type attachment. Elements 9 through 16 use captive latches.

- Remove elements from one side of antenna boom.

CAUTION

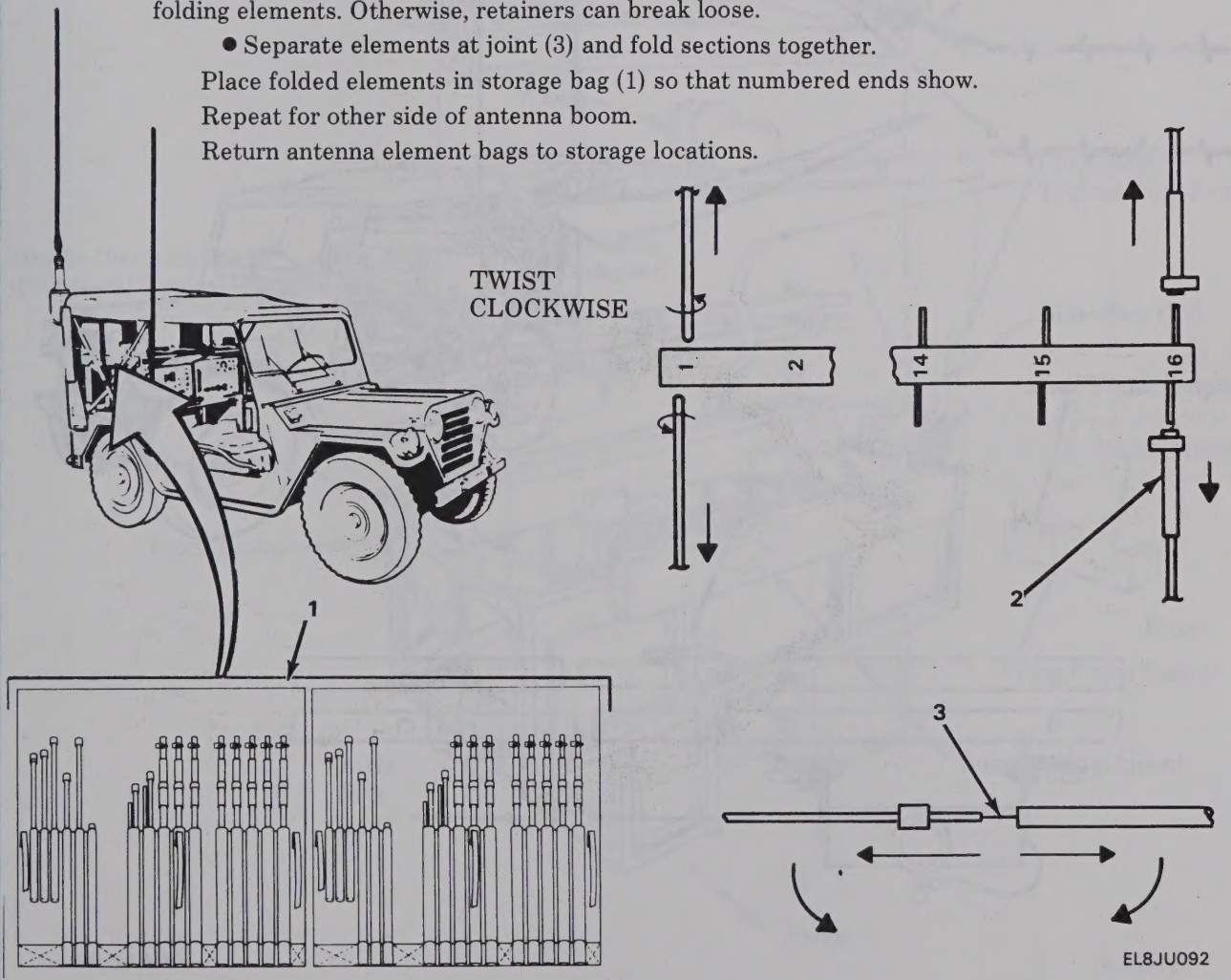
Avoid unnecessary overstretching, excessive tension, and abuse of shock cord retainers on folding elements. Otherwise, retainers can break loose.

- Separate elements at joint (3) and fold sections together.

Place folded elements in storage bag (1) so that numbered ends show.

Repeat for other side of antenna boom.

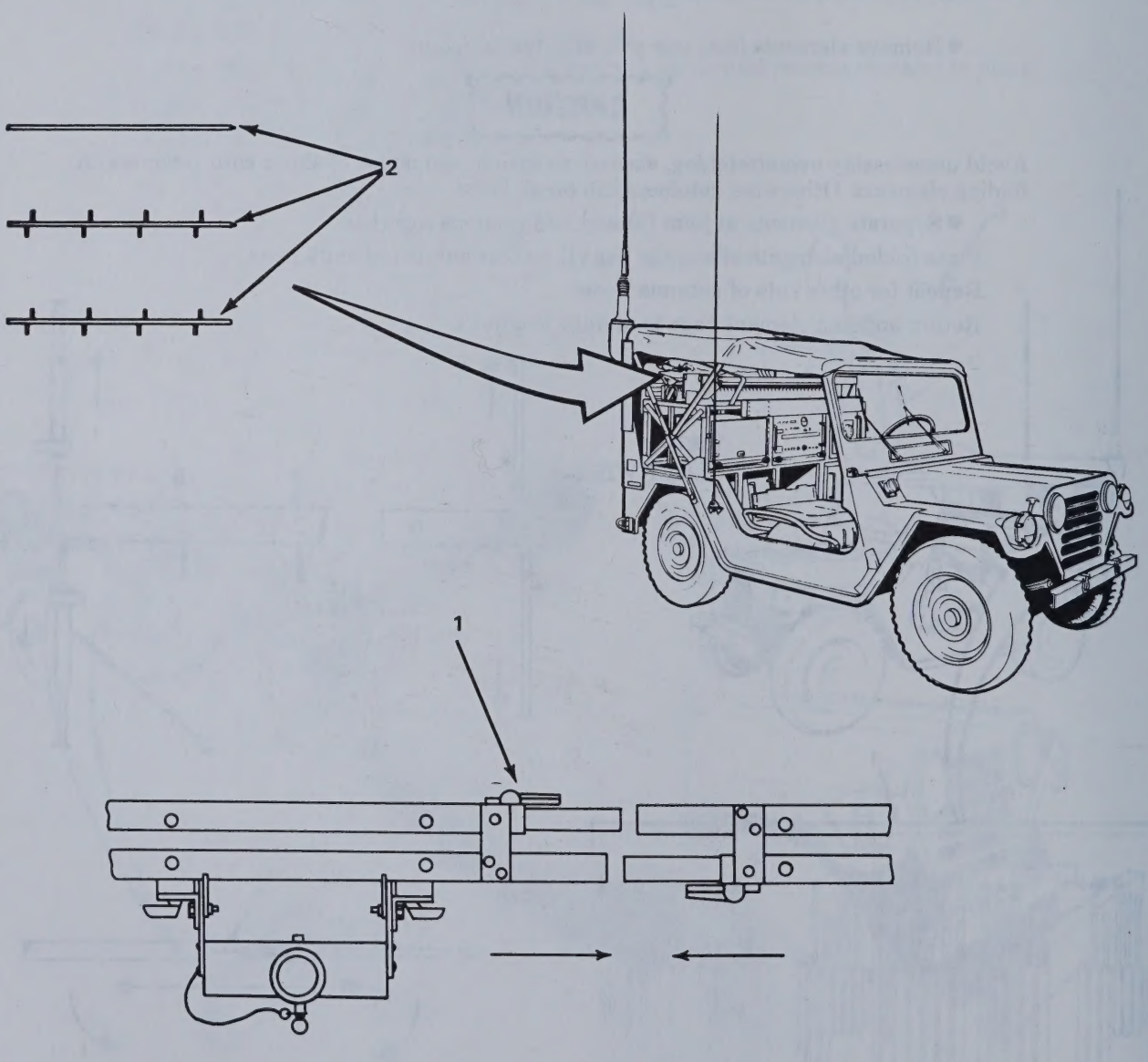
Return antenna element bags to storage locations.



2-10. PREPARATION FOR MOVEMENT. – Continued

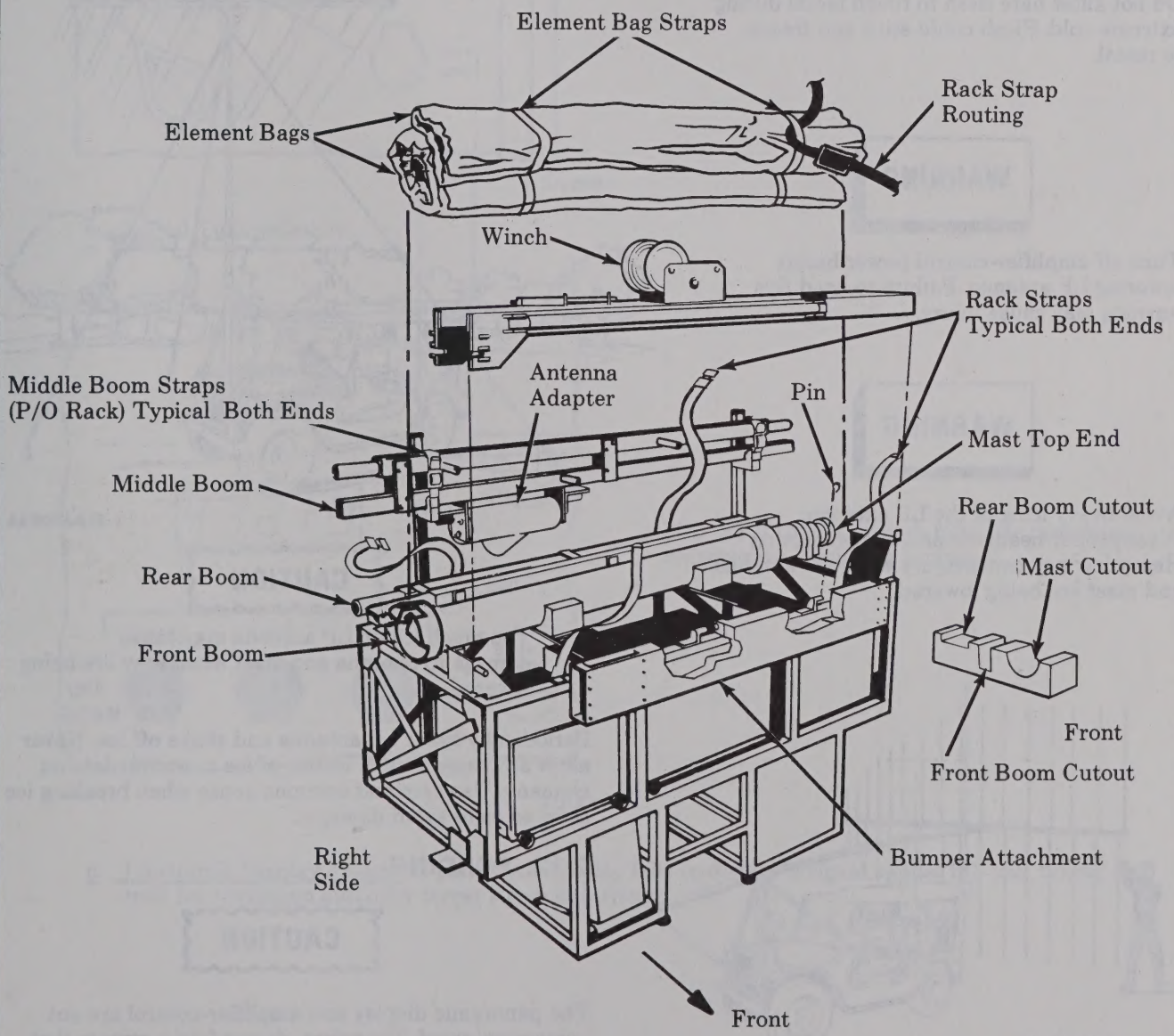
c. Taking LP Antenna Apart. – Continued

Soldier B
Step 2 – Take LP antenna boom apart: Open latches (1) securing LP antenna boom sections together. Slide LP antenna boom sections (2) apart. Put LP antenna boom sections in storage locations.



d. Tying Down Equipment.

Soldier A	Soldier B
Check that all components are in position on the left side of the vehicle. Secure left end of middle boom with rack strap. Secure main rack strap on left side after interlacing with element strap. Check that bumper attachment is in position and secured with pin.	Check that all components are in position on the right side of the vehicle. Secure right end of middle boom with rack strap. Secure rack strap on right side after interlacing with element bag strap.



Section IV. OPERATION UNDER UNUSUAL CONDITIONS

2-11. OPERATION UNDER UNUSUAL WEATHER.

a. High Winds. When winds are 35 mph or greater, secure LP antenna mast with guy ropes. Do not erect LP antenna if winds are expected to exceed 60 mph.

b. Icing Conditions. Use guy ropes because of extra loading on LP antenna.

c. Antenna Deicing.

WARNING

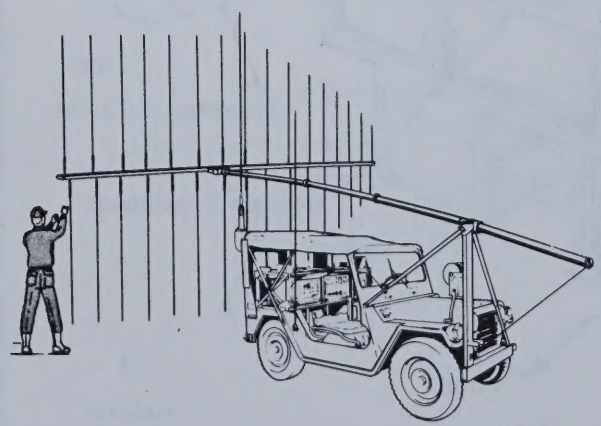
Do not allow bare flesh to touch metal during extreme cold. Flesh could stick and freeze to metal.

WARNING

Turn off amplifier-control power before lowering LP antenna. Failure to heed this warning may cause injury.

WARNING

Avoid heavy icing of the LP antenna. Wear proper headgear and eye protection Heavy ice may cause injury while LP antenna and mast are being lowered.



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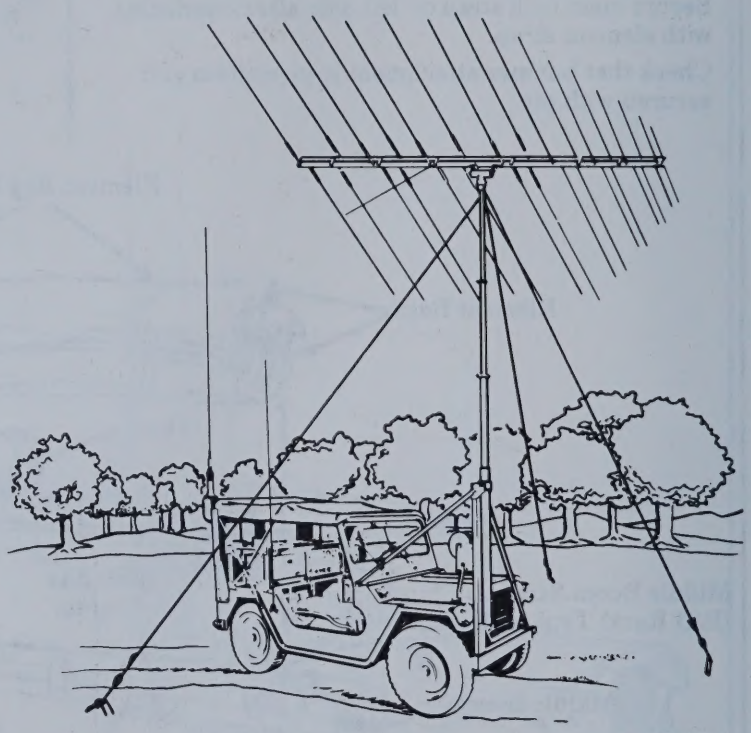

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CAUTION

Too much ice on LP antenna may cause damage to antenna and mast when they are being lowered.

Periodically lower LP antenna and shake off ice. Never allow any more than ⅜ inches of ice to accumulate on elements Use care and common sense when breaking ice away so as to avoid damage..

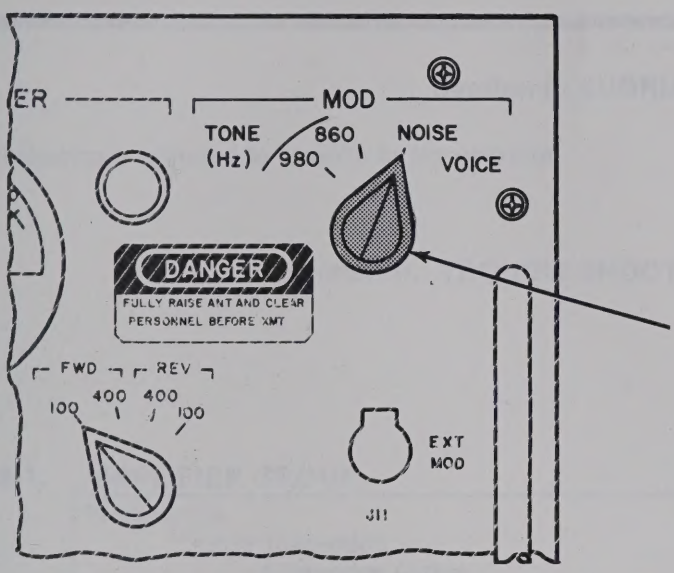
2-12. FORDING.

CAUTION

The panoramic display and amplifier-control are not immersion-proof. Therefore, do not ford a stream that would allow water to reach these items.

2-13. EMERGENCY PROCEDURES.

a. Partial Modulation Failure.



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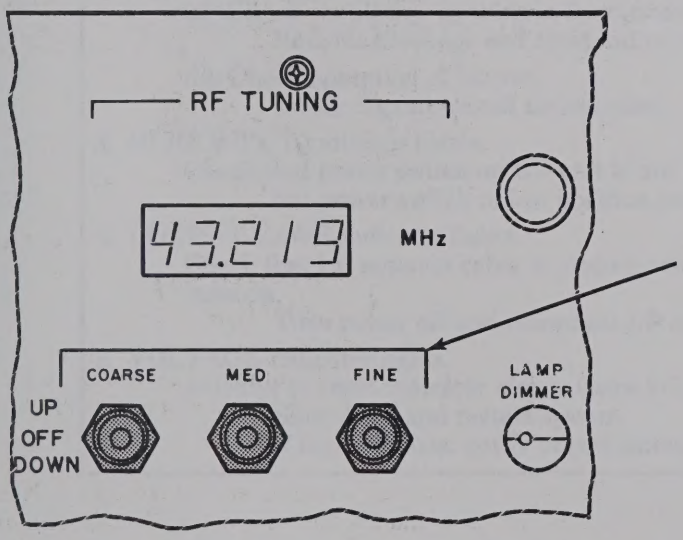
b. Partial Tuning Failure.



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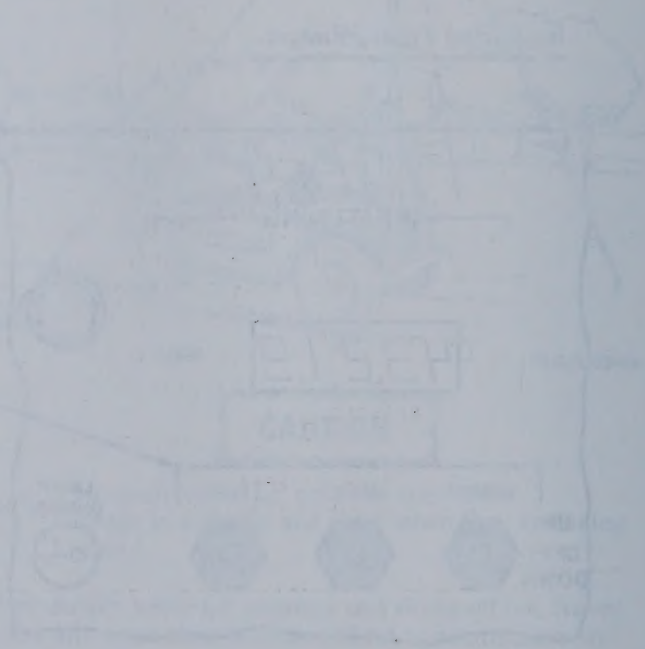
c. Panoramic Display Failure. If panoramic display fails to display a signal, adjust RT unit tuning controls for maximum audio for target signal detection.



CHAPTER 3

OPERATOR MAINTENANCE

Section I. LUBRICATION

No lubrication is required to be done by the operator.

Section II. TROUBLESHOOTING PROCEDURES

3-1. AMPLIFIER GROUP.

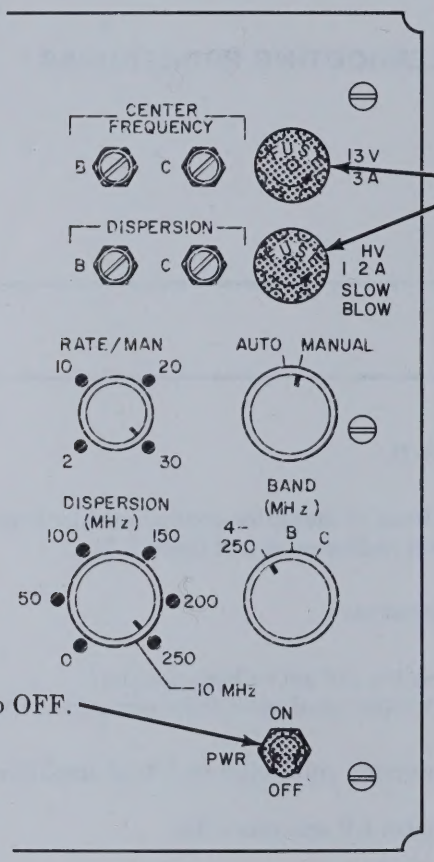
Malfunction Test or Inspection Corrective Action
1. Panoramic display does not operate. Check for good fuses. Replace bad fuses (para 3-2).
2. THERMAL indicator lights. (a) Check ventilation opening in front of amplifier-control for blockage. Remove blockage and reset indicator circuit (para 2-7b). (b) Check operation of blower. Notify organizational maintenance.
3. HI RF INPUT indicator lights. Check that power switch on RT unit is not set to high position. Set power switch to low position amd reset indicator circuit (para 2-7b).
4. OUTPUT VSWR indicator lights. Check that LP antenna cable is properly connected to J10 of amplifier-control and LP antenna. Turn power off and reconnect LP antenna cable.
5. VOLTAGE indicator lights. Attempt to reset indicator circuit (para 2-7b). Shut down and restart system. If fault persists, notify organizational maintenance.

Section III. MAINTENANCE PROCEDURES

3-2. PANORAMIC DISPLAY FUSE REPLACEMENT.

NOTE

There is no high voltage hazard at HV1/2A SLOW BLOW. It fuses 12.5 Vdc to high voltage supply.

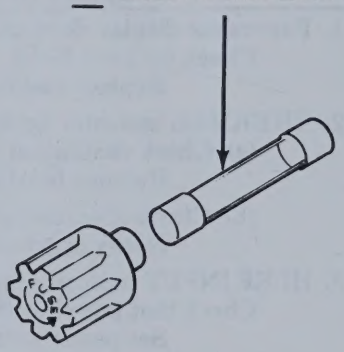


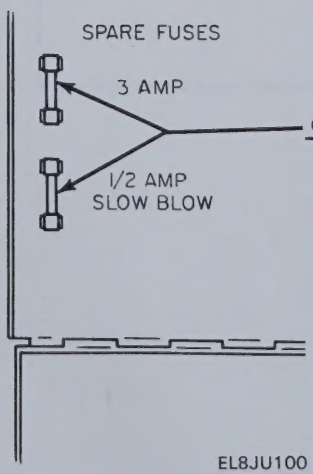
EL8JU098

a. Set PWR switch to OFF.

b. Press and turn fuse cap counter-clockwise and pull from fuse holder.

c. Remove fuse from cap.





EL8JU100

d. Remove proper value of spare fuse from inside panoramic display cover.

e. Insert fuse into cap and insert cap and fuse into fuse holder. Press and turn fuse cap clockwise.

3-3. CLEANING.

a. Clean panoramic display plexiglass shield using cloth (item 1, app D) moistened with water.

b. Clean meter face using cloth (item 1, app D) moistened with water.

CAUTION

Do not press on plexiglass shield or meter face when cleaning. Too much pressure may damage plexiglass shield or meter face.

CHAPTER 4

OPERATOR MAINTENANCE OF AUXILIARY EQUIPMENT

4-1. RADIO SET.

For operator maintenance on the radio set, refer to TM 11-5820-401-10-1.

4-2. KY UNITS.

For operator maintenance of KY units, refer to TM 11-5810-245-10 for TSEC/KY-38 and TM 11-5810-256-12 for TSEC/KY-57.

APPENDIX A

REFERENCES

A-1. SCOPE.

This appendix lists all forms, field manuals, technical manuals and miscellaneous publications referenced in this manual that are available to you.

A-2. FORMS.

Recommended Changes to DA Publications	DA Form 2028-2
Quality Deficiency Report	SF 368

A-3. FIELD MANUALS.

Artificial Respiration	FM 21-11

A-4. DA PAMPHLET.

The Army Maintenance Management System (TAMMS)	DA Pam 738-750

A-5. TECHNICAL MANUALS.

Operator's Manual: Radio Sets AN/VRC-12 (NSN 5820-00-223-7412), AN/VRC-43 (NSN 5820-00-223-7415), AN/VRC-44 (NSN 5820-00-223-7417),AN/VRC-45 (NSN 5820-00-223-7418), AN/VRC-46 (NSN 5820-00-223-7433), AN/VRC-47 (NSN 5820-00-223-7434), AN/VRC-48 (NSN 5820-00-223-7435), and AN/VRC-49 (NSN 5820-00-223-7437) (Used without an Intercom System)	TM 11-5820-401-10-1
Operator's and Organizational Maintenance Manual (Including Repair Parts and Special Tools List) for Communications Security Equipment TSEC/KY-57 (NSN 5810-00-434-3644)	TM 11-5810-256-12 (NAVELEX EE150-JA-OPI-010/E150)
Operator's Manual for Communications Security Equipment TSEC/KY-38 (NSN 5810-00-874-9776)	TM 11-5810-245-10

APPENDIX B

COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS

Section I. INTRODUCTION

B-1. SCOPE.

This appendix lists components of end item and basic issue items for the amplifier group to help you inventory items required for safe and efficient operation.

B-2. GENERAL.

The Components of End Item and Basic Issue Items Lists are divided into the following sections:

a. Section II. Components of End Item. This listing is for informational purposes only, and is not authority to requisition replacements. These items are part of the end item, but may be removed and separately packaged for transportation or shipment. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. Illustrations are furnished to assist you in identifying the items.

b. Section III. Basic Issue Items. These are minimum essential items required to place the amplifier group in operation, to operate it, and/or to perform emergency repairs. Although shipped separately packaged, basic issue items must be with the amplifier group during operation and whenever it is transferred between property accounts. This manual is your authority to request/requisition replacement basic issue items, based on TOE/MTOE authorization of the end item.

B-3. EXPLANATION OF COLUMNS.

The following provides an explanation of columns found in the tabular listings:

a. Column (1) – Illustration Number (Illusn Number). This column indicates the number of the illustration in which the item is shown.

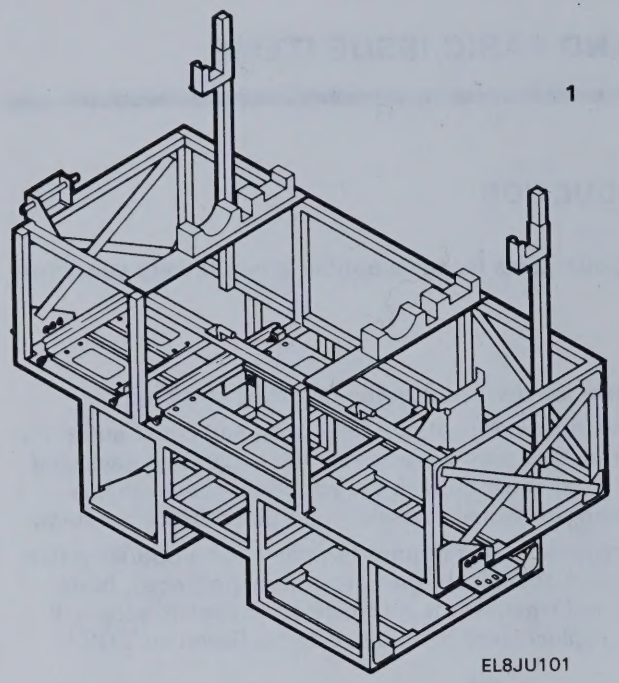
b. Column (2) – National Stock Number. Indicates the National stock number assigned to the item and will be used for requisitioning purposes.

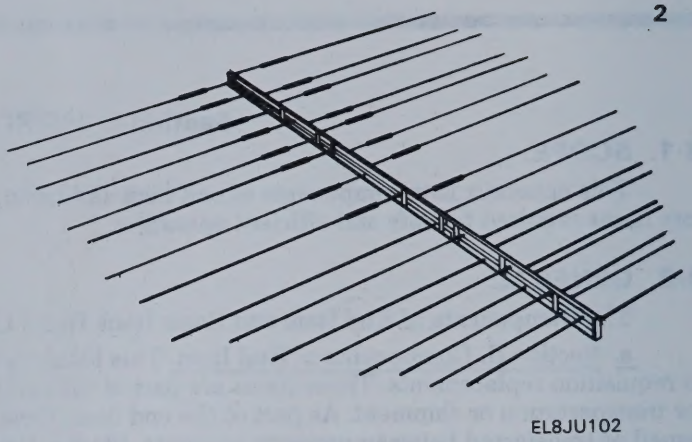
c. Column (3) – Description. Indicates the Federal item name and, if required, a minimum description to identify and locate the item. The last line for each item indicates the FSCM (in parentheses) followed by the part number.

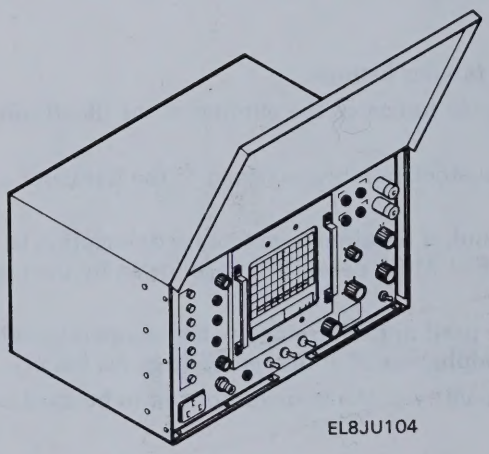
d. Column (4) – Unit of Measure (U/M). Indicates the measure used in performing the actual operational/maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in., pr).

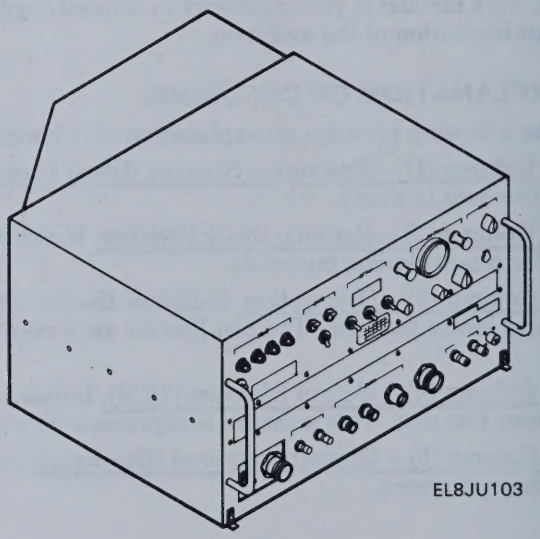
e. Column (5) – Quantity required (Qty Reqd). Indicates the quantity of the item authorized to be used with/on the equipment.

Section II. COMPONENTS OF END ITEM LIST

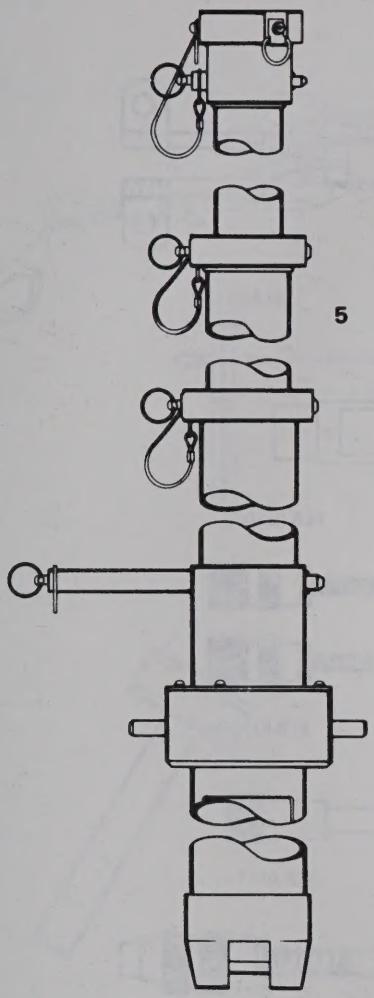








(1) Illusn Number	(2) National Stock Number	(3) Description FSCM and Part Number	Usable on Code	(4) U/M	(5) Qty Reqd
1	5895-01-159-5056	Rack Assembly, Electronic Equipment (57957) C5115295		Ea	1
2	5985-01-159-5145	Antenna Assembly, Log Periodic (57957) C5115377		Ea	1
3	5895-01-159-5070	Amplifier-Control (57957) C5115257		Ea	1
4	5895-01-159-5054	Display, Panoramic (57957) C5115256		Ea	1



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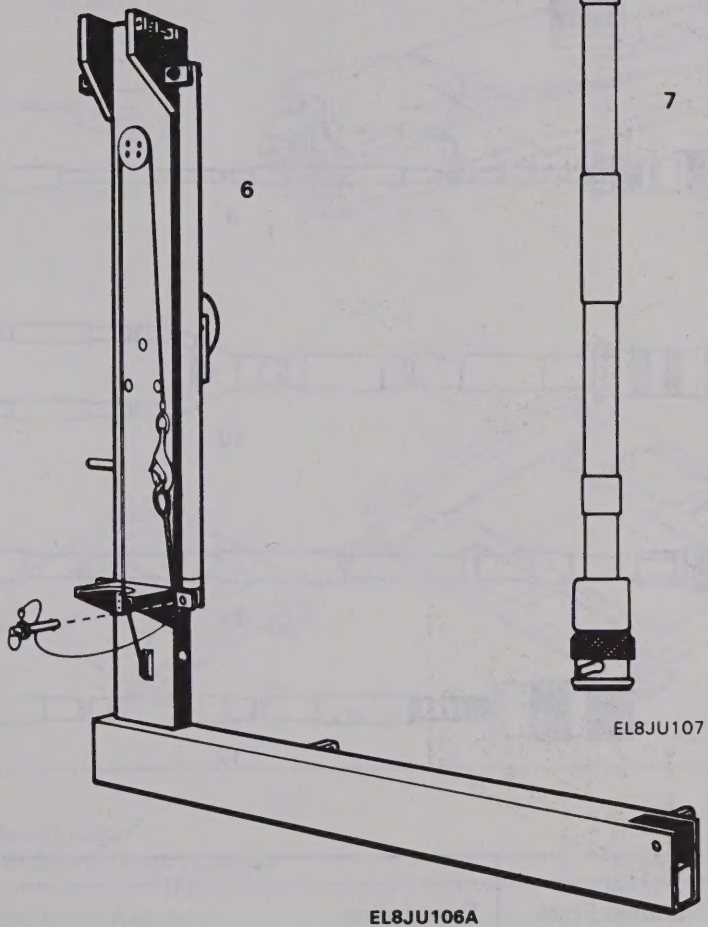
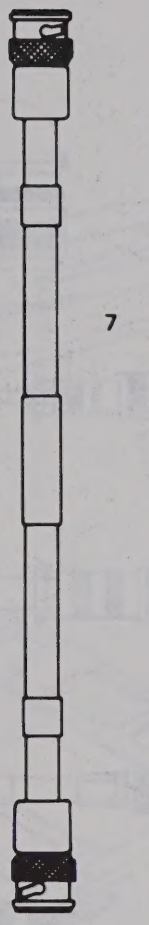
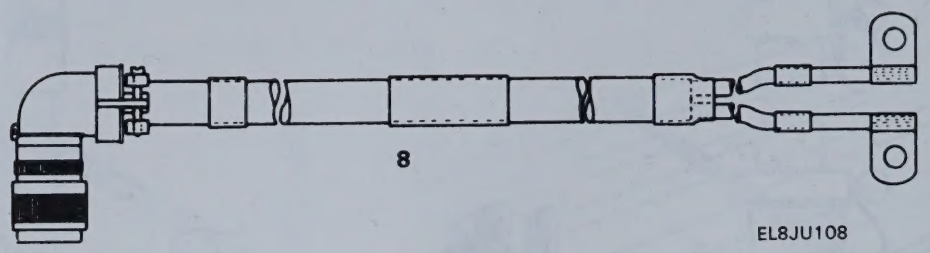


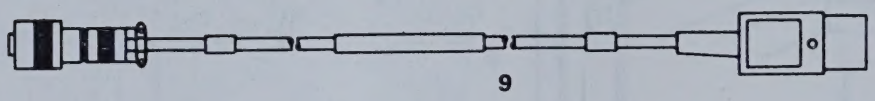
EL8JU106A

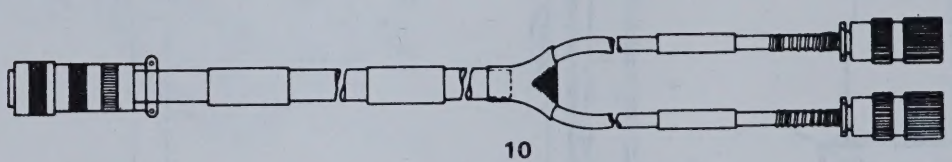


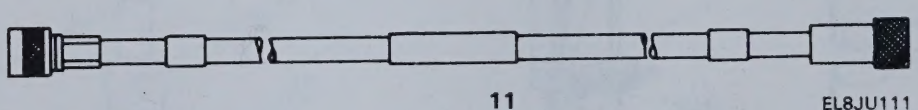
EL8JU107

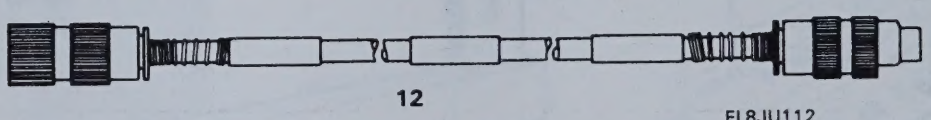
(1) Illusn Number	(2) National Stock Number	(3) Description FSCM and Part Number	Usable on Code	(4) U/M	(5) Qty Reqd
5	5985-01-159-5093	Mast, Antenna (57957) C5115258		Ea	1
6	5895-01-159-5074	Mount Assembly, Antenna Mast (57957) C5115370		Ea	1
7	5995-00-823-2986	Cable Assembly, Radio Frequency (57957) C5115373, (80058) CG-1773B/U		Ea	1
7	5995-00-823-2991	Cable Assembly, Radio Frequency (57957) C5115375, (80058) CG-1773B/U		Ea	1



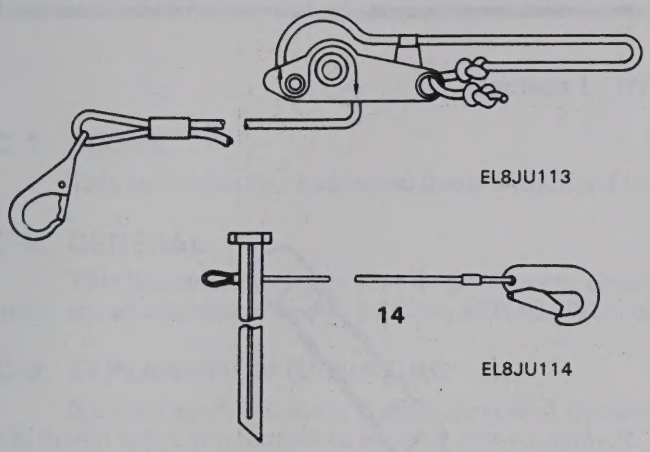


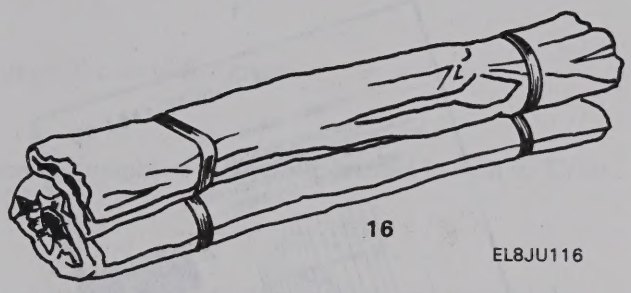


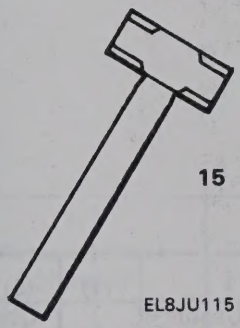


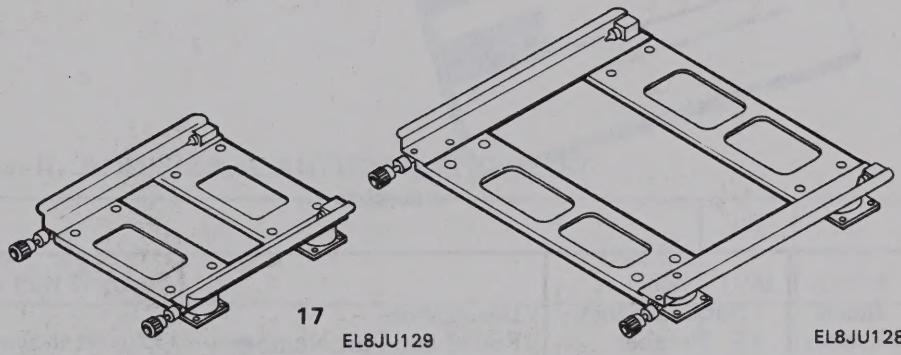


(1) Illusn Number	(2) National Stock Number	(3) Description FSCM and Part Number	Usable on Code	(4) U/M	(5) Qty Reqd
8	5995-01-159-5113	Cable Assembly, Special Purpose, Electrical (57957) C5115371, (80058) CX-13267/VRC		Ea	1
9	5995-01-159-5114	Cable Assembly, Special Purpose, Electrical (57957) C5115372, (80058) CX-13268/VRC		Ea	1
10	5995-01-171-9869	Cable Assembly, Special Purpose, Electrical, Branched (57957) C5115374, (80058) CX-13269/VRC		Ea	1
11	5995-01-159-5112	Cable Assembly, Radio Frequency (57957) C5115376, (80058) CG-3840/VRC		Ea	1
12	5995-01-171-9870	Cable Assembly, Special Purpose, Electrical (57957) C5115385, (80058) CX-13270/VRC		Ea	1









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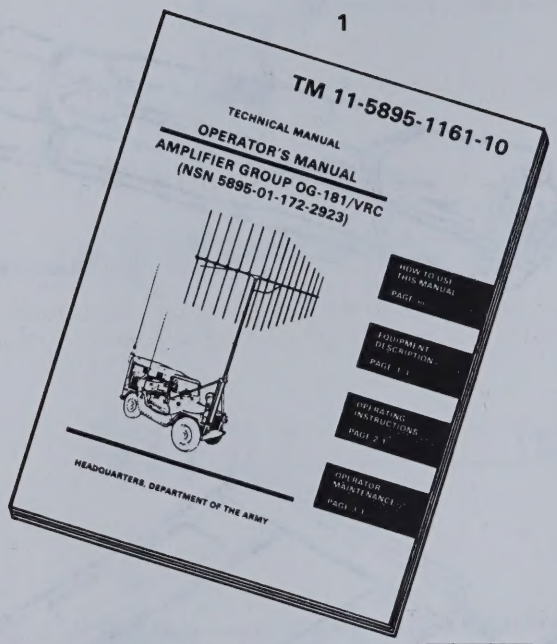
13	---	Guy Rope Assembly (57957) C5115537		Ea	3
14	---	Stake Assembly (57957) C5115529		Ea	3
15	---	Hammer, Sledge (57957) C5115466		Ea	1
16	5895-01-159-5073	Bag, Storage (93346) 5253404		Ea	2
17	---	Tray, Mounting (57957) C5115472		Ea	1
18	---	Tray, Mounting (57957) C5115473		Ea	1

Section III. BASIC ISSUE ITEMS LIST

1



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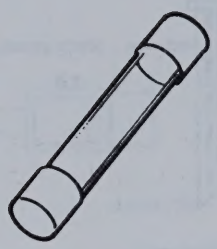
2



EL8JU136

(1) Illusn Number	(2) National Stock Number	(3) Description FSCM and Part Number	Usable on Code	(4) U/M	(5) Qty Reqd
1	---	Operator's Manual: Amplifier Group OG-181/VRC, TM 11-5895-1161-10		Ea	1
2	5920-00-010-6652	Fuse, 3 Ampere (81349) F02A250V3A		Ea	1
2	5920-01-069-4165	Fuse, ½ Ampere, Slow Blow (28480) 2110-0202		Ea	1

APPENDIX C

ADDITIONAL AUTHORIZATION ITEMS

Section I. INTRODUCTION

C-1. SCOPE.

This appendix lists additional items authorized to support the amplifier group.

C-2. GENERAL.

This list identifies items that do not have to accompany the amplifier group or be turned in with it. These items are all authorized to you by CTA, MTOE, TDA, or JTA.

C-3. EXPLANATION OF LISTING.

National stock numbers, descriptions, and quantities are provided to help you identify and request the additional items you require to support this equipment. The items are listed in alphabetical sequence by item name.

Section II. ADDITIONAL AUTHORIZATION LIST

(1) National Stock Number	(2) Description FSCM and Part Number	Usable on Code	(3) U/M	(4) Qty Authd
5810-00-874-9776	Communications Security Equipment (98230) TSEC/KY-38		Ea	1
	or			
5810-00-043-3644	(98230) TSEC/KY-57		Ea	*
5820-00-450-6804	Installation Kit, Electronic Equipment (80058) MK-1234/GRC		Ea	1
	or			
5820-00-193-8348	(80058) MK-1306/VRC-47		Ea	1
5820-00-223-7433	Radio Set (80058) AN/VRC-46		Ea	1
	or			
5820-00-223-7434	(80058) AN/VRC-47		Ea	1
2320-00-763-1092	Truck, Utility, ¼-Ton, 4x4 (19207) M151A1		Ea	1
	or			
2320-00-177-9258	(19207) M151A2		Ea	1

*Quantity may be 1 ea if Radio Set AN/VRC-46 is used; 2 ea if Radio Set AN/VRC-47 is used.

APPENDIX D

EXPENDABLE SUPPLIES AND MATERIALS

Section I. INTRODUCTION

D-1. SCOPE.

This appendix lists expendable supplies and materials you will need to operate and maintain the amplifier group. These items are authorized to you by CTA 50-970, Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items).

D-2. EXPLANATION OF COLUMNS.

a. Column (1) – Item number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material. (For example, "Use cloth, item 1, appendix D.")

b. Column (2) – Level. This column identifies the lowest level of maintenance that requires the listed item. The C means Operator/Crew maintenance level.

c. Column (3) – National Stock Number. This is the National stock number assigned to the item; use it to request or requisition the item.

d. Column (4) – Description. Indicates the Federal item name and, if required, a description to identify the item.

e. Column (5) – Unit of Measure (U/M). Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in., pr). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

Section II. EXPENDABLE SUPPLIES AND MATERIALS LIST

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
1	C	8305-00-267-3015	Cheesecloth	AR

APPENDIX E

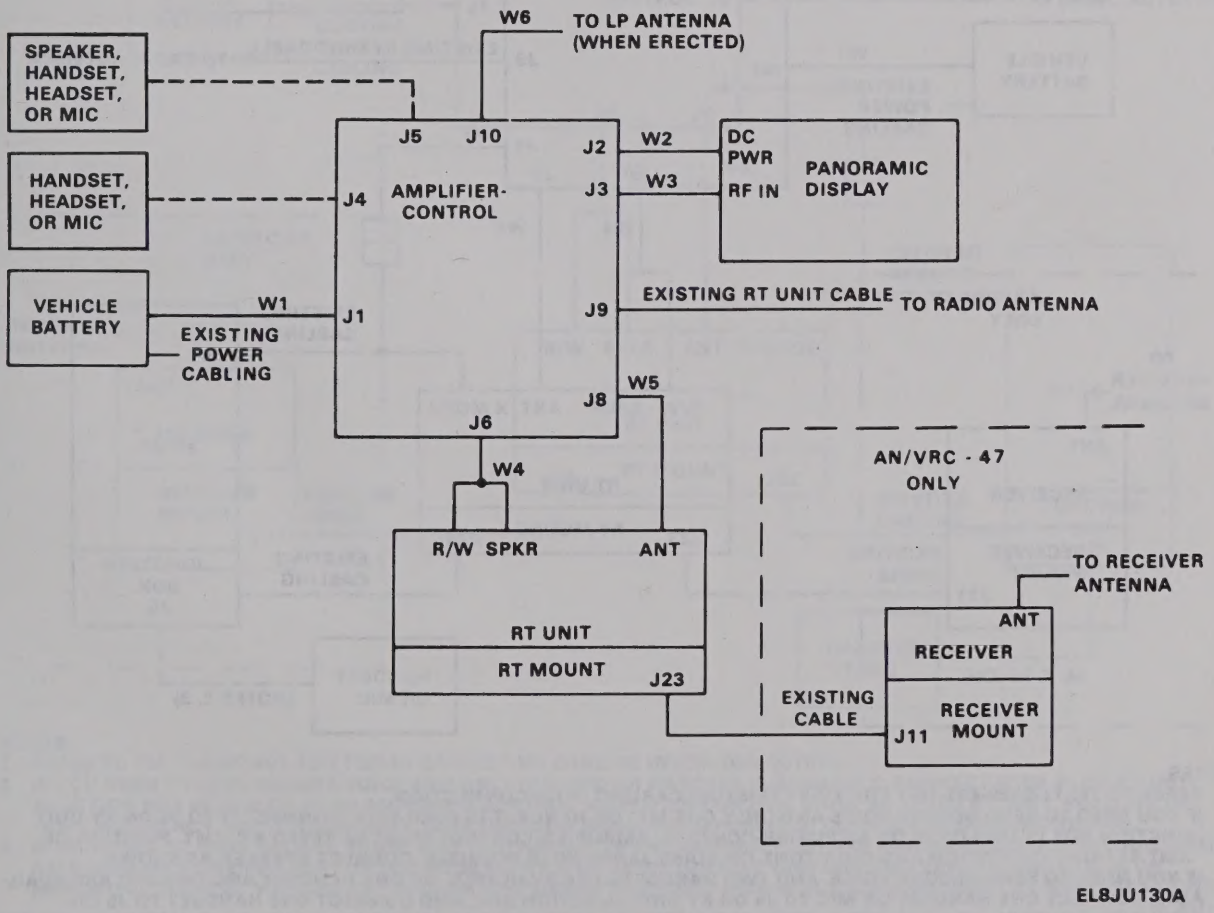
CABLE CONNECTIONS

E-1. SCOPE.

This appendix contains information on the interconnecting cable hookups for the amplifier group. Use the information in this appendix to check cable connections or to make cable connections when required.

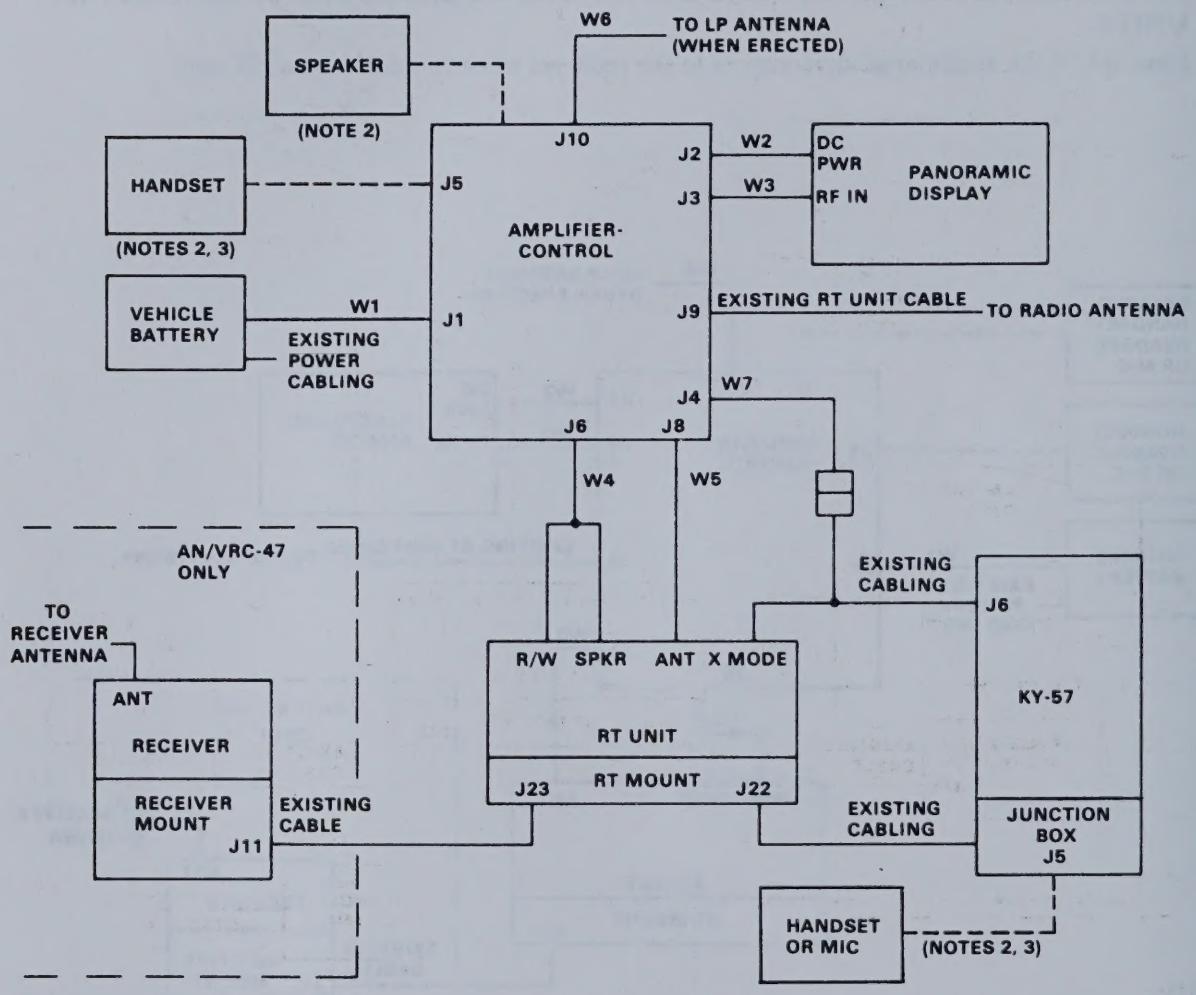
E-2. INTERCONNECTION WITH RADIO SET AN/VRC-46 OR AN/VRC-47 WITHOUT KY UNITS.

Here is how the amplifier group connects to the radio set when you don't use a KY unit:



E-3. INTERCONNECTION WITH RADIO SET AN/VRC-46 OR AN/VRC-47 AND KY-57.

If you have the KY-57, check or make the connections of the amplifier group and radio set according to the following:



NOTES:

1. REFER TO TM 11-5820-401-10-1 FOR KY-57 EXISTING CABLING INTERCONNECTION.
2. IF YOU NEED TO SEND SECURE VOICE AND ONLY ONE MIC OR HANDSET IS AVAILABLE, CONNECT IT TO J5 ON KY UNIT JUNCTION BOX IN LIEU OF J5 ON AMPLIFIER-CONTROL. AMPLIFIER-CONTROL MUST BE KEYED BY XMT POSITION OF XMT SET-ON RCV SWITCH AND ONLY TONE OR NOISE JAMMING IS POSSIBLE. CONNECT SPEAKER AS SHOWN.
3. IF YOU NEED TO SEND SECURE VOICE, AND TWO HANDSETS ARE AVAILABLE, OR ONE HANDSET AND ONE MIC ARE AVAILABLE, CONNECT ONE HANDSET OR MIC TO J5 ON KY UNIT JUNCTION BOX, AND CONNECT ONE HANDSET TO J5 ON AMPLIFIER-CONTROL. YOU CAN KEY SYSTEM AND LISTEN TO TARGET SIGNAL AUDIO VIA HANDSET AT AMPLIFIER-CONTROL.

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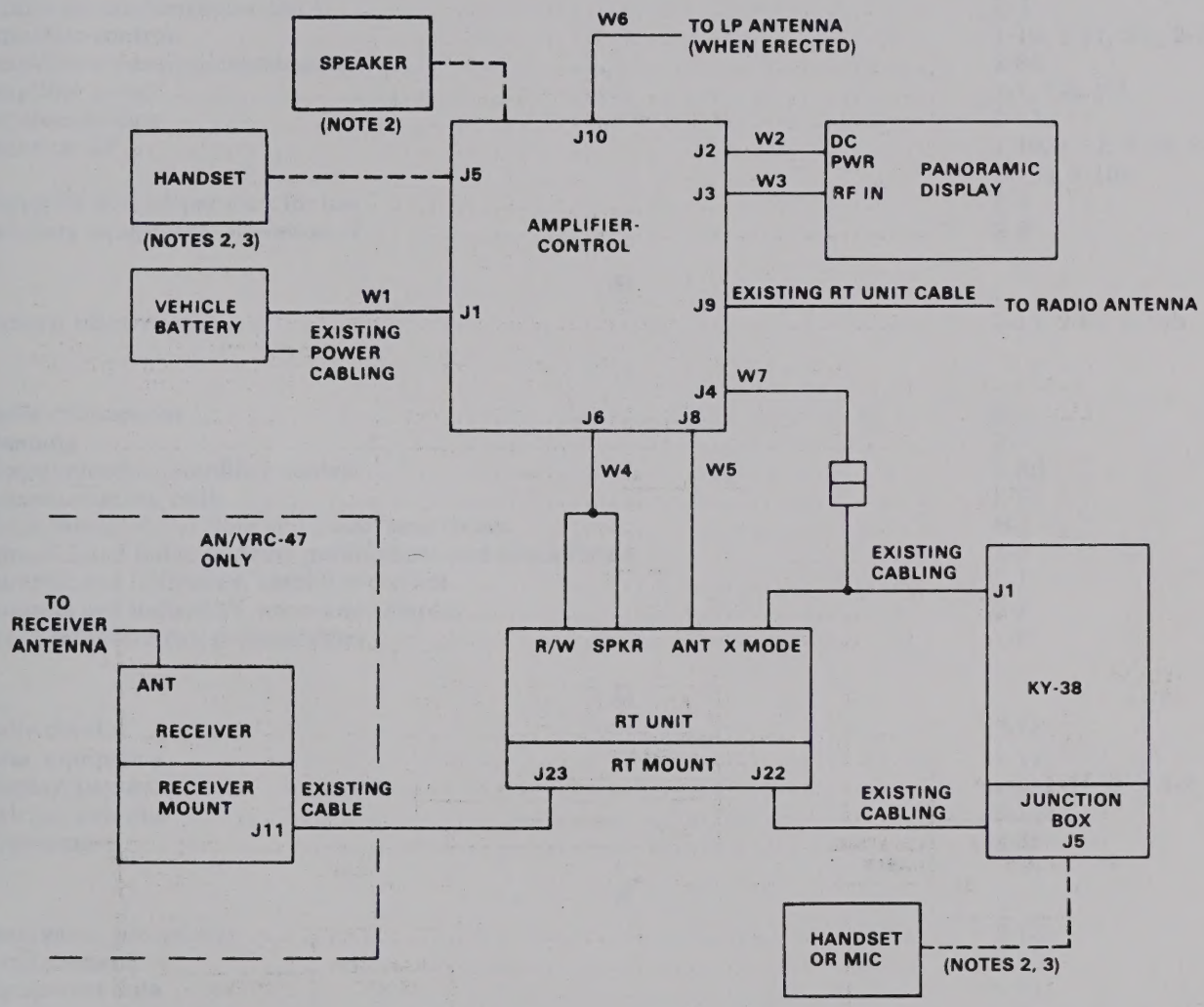
E-4. INTERCONNECTION WITH RADIO SET AN/VRC-46 OR AN/VRC-47 AND KY-38.

If you have the KY-38, you should use the following diagram to check or make the connections of the amplifier group and radio set:



NOTES:

1. REFER TO TM 11-5820-401-10-1 FOR KY-38 EXISTING CABLING INTERCONNECTION.
2. IF YOU NEED TO SEND SECURE VOICE AND ONLY ONE MIC OR HANDSET IS AVAILABLE, CONNECT IT TO J5 ON KY UNIT JUNCTION BOX IN LIEU OF J5 ON AMPLIFIER-CONTROL. AMPLIFIER-CONTROL MUST BE KEYED BY XMT POSITION OF XMT SET-ON RCV SWITCH AND ONLY TONE OR NOISE JAMMING IS POSSIBLE. CONNECT SPEAKER AS SHOWN.
3. IF YOU NEED TO SEND SECURE VOICE, AND TWO HANDSETS ARE AVAILABLE, OR ONE HANDSET AND ONE MIC ARE AVAILABLE, CONNECT ONE HANDSET OR MIC TO J5 ON KY UNIT JUNCTION BOX, AND CONNECT ONE HANDSET TO J5 ON AMPLIFIER-CONTROL. YOU CAN KEY SYSTEM AND LISTEN TO TARGET SIGNAL AUDIO VIA HANDSET AT AMPLIFIER-CONTROL.

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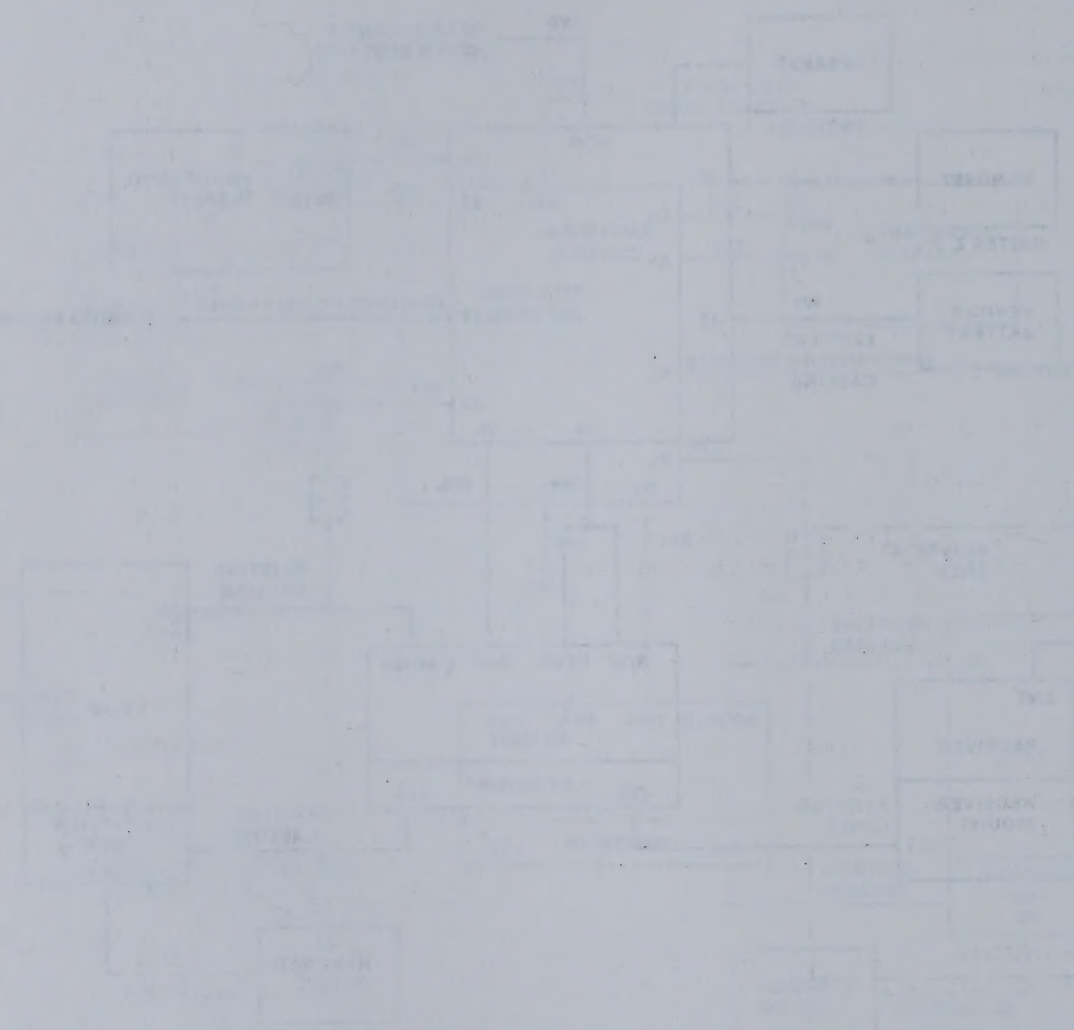

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RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

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FROM (PRINT YOUR UNIT'S COMPLETE ADDRESS)
Commander
Stateside Army Depot
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Stateside, N.J. 07703

DATE SENT
10 July 1975

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 11-5840-340-12		Radar Set AN/PRC-76

BE EXACT PIN-POINT WHERE IT IS				IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:
PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO	
2-25	2-28			Recommend that the installatior antenna alignment procedure be changed throughout to specify a 2^{o} IFF antenna lag rather than 1^{o}. REASON: Experience has shown that with only a 1^{o} lag, the antenna servo system is too sensitive to wind gusting in excess of 25 knots, and has a tendency to rapidly accelerate and decelerate as it hunts, causing strain to the drive train. Hunting is minimized by adjusting the lag to 2^{o} without degradation of operation.
3-10	3-3		3-1	Item 5, Function column. Change "2 db" to "3db." REASON: The adjustment procedure the the TRANS POWER FAULT indicator calls for a 3 db (500 watts) adjustment to light the TRANS POWER FAULT indicator.
5-6	5-8			Add new step f.1 to read, "Replace cover plate removed in step e.1, above." REASON: To replace the cover plate.
		F03		Zone C 3. On J1-2, change "+24 VDC to "+5 VDC." REASON: This is the output line of the 5 VDC power supply. +24 VDC is the input voltage.

PRINTED NAME GRADE OR TITLE AND TELEPHONE NUMBER	SIGN HERE
SSG I. M. DeSpiritof 999-1776	I. M. DeSpiritof

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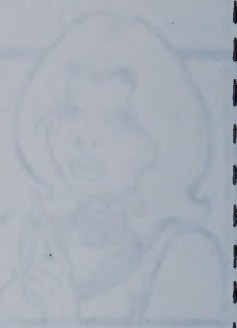

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